₹150
www.indianpoultryreview.com

INDIAN POULTRY REVIEW

THE MAGAZINE OF INDIAN POULTRY INDUSTRY | FEBRUARY 2025

COVER

IMPACT OF INFECTIOUS DISEASES AND METABOLIC SYNDROMES

ARTICLE

Biosecurity Essentials for Feed Mills

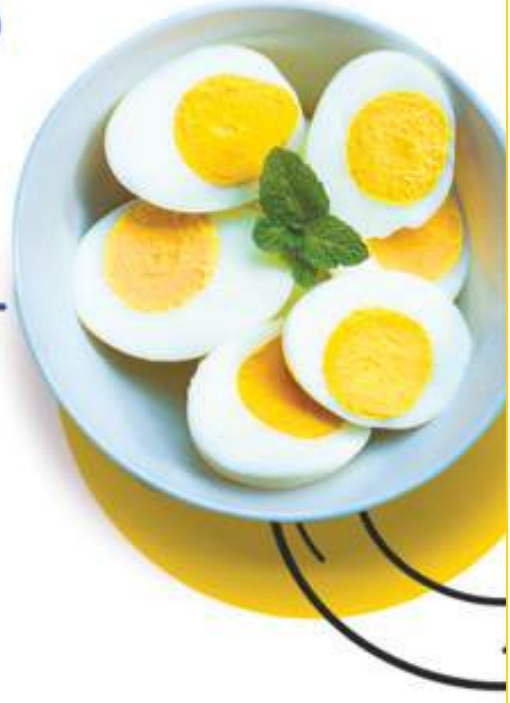
totalfoods.in

Google Play App Store

TOTAL®

- FRESH CHILLED CHICKEN
- FROZEN CHICKEN
- READY TO COOK
- COLD CUTS
- MARINATED CHICKEN
- CHICKEN KEBABS
- FARM FRESH CHICKEN EGGS
- CHICKEN MOMO
- FROZEN VEG PRODUCTS
- REFINED SOYABEAN OIL
- ADYA DAIRY PRODUCTS

Make a GOOD CHOICE Today!



/TotalFoodsIndia /TotalFoods

ROSS 308 AP

With the ROSS 308 AP YOU GET MORE THAN JUST A BREED

Aviagen's® Ross® 308 AP continues to deliver increasingly better performance year-after-year for both our breeders and broilers.

Thanks to the superior meat yield, quality, texture, and tenderness of the Ross 308 AP, combined with our best PAN India free technical support for our customers, makes it the preferred choice.

Aviagen India
Poultry Breeding Company
Private Limited

+91 4252 233 650
info@aviagen.com
www.aviagen.com

BREEDING SUCCESS TOGETHER

Aviagen® India | ROSS

GLAMAC
COURAGE TO REACH HORIZON
ISO 9001-2015 Certified Company

Say no to
AGP &
HALQUINOL

Certified By NABL Lab
ANTIBIOTIC FREE

CYNKA® HBR
CYNKA® HBR 50

R & D Excellence... born with Research & Technical Trials

Antidiarrhoeal • Antimicrobial • Gut Health Modulator

- Looking for an alternative to Antibiotics (AGP) & Halquinol?
- Looking for a solution to *E.coli*, Salmonella, Digestive Disorders & Loose Droppings ?

Seeing is believing
Try CYNKA® HBR
CYNKA® HBR 50

Awarded as
"Veterinary Pharma Innovation of the year"
By The Economic Times (2024)

Highly Effective against Gut *E. coli*

25 Kg

Nature's blend for
Healthy Gut Healthy Bird

ET THE ECONOMIC TIMES
AWARD WINNER

For more information please contact:
Glamac International Pvt. Ltd.
413, Orion Business Park, 4th Floor, Kapurbawadi
Ghodbunder Road, Thane (W)- 400610, Mumbai, India.
• www.glamac.com • Email: info@glamac.com, sumon@glamac.com
• Dr. Sumon Nag Chowdhury: +91 9051512590

CONTENTS

INDIAN POULTRY REVIEW
www.indianpoultryreview.com
THE MAGAZINE OF INDIAN POULTRY INDUSTRY

Volume 59 | Issue 07 | February 2025

EDITORIAL BOARD

MANAGING EDITOR : G. N. Ghosh
EXECUTIVE EDITOR : Sanjoy Mukerji
ASSOCIATE EDITORS : Shelley Ghosh | G. G. Narayana
ADVERTISEMENT SALES OFFICE - KOLKATA
57-B, Townshend Road, Kolkata-700 025
Phone: +91 98310 24002
E-mail: sanjoy@indianpoultryreview.com
Designed by Hushframe Ideas Pvt.Ltd
Cover Courtesy: iStock

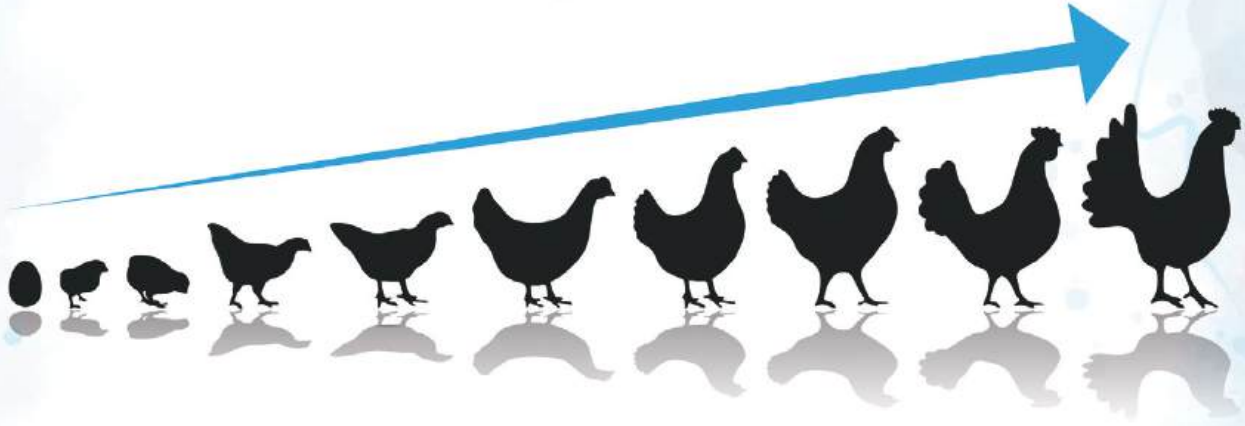
Edited and Published by G.N. Ghosh from 57-B, Townshend Road, Kolkata-700025 and printed by G.N. Ghosh at Salmoli Publication, 57-B, Townshend Road, Kolkata - 700025

Venworld®
THE BEST IN ANIMAL HEALTHCARE

GROWLINE

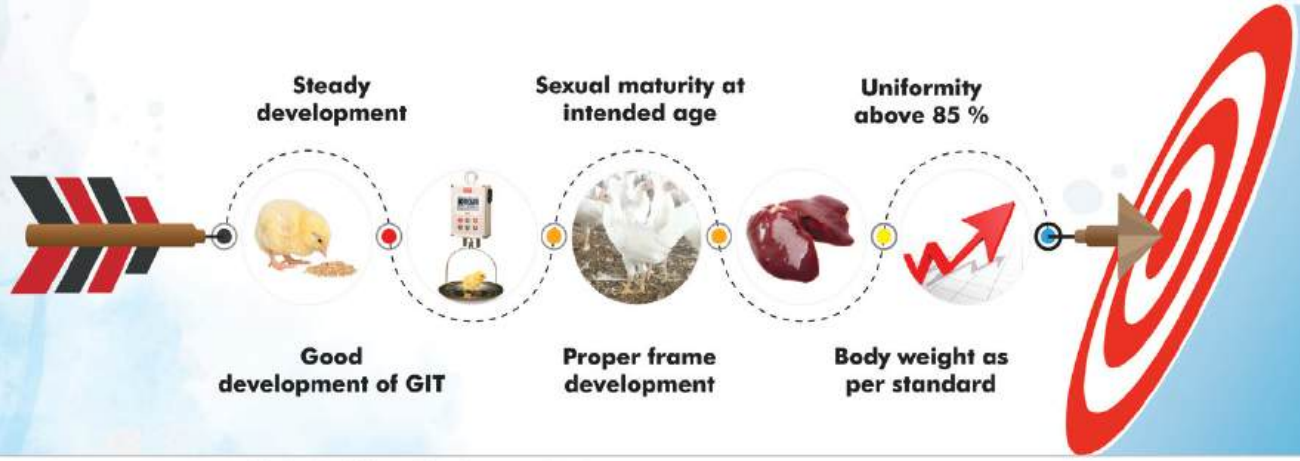
To achieve the growing period targets in commercial layers...

Growing phase in layers determines the productive efficiency of the birds...



Body weight and uniformity are the critical factors for better performance

Targets in Growing phase of commercial layers -



For further information please contact :

VENKY'S (INDIA) LIMITED

ANIMAL HEALTH PRODUCTS DIVISION

An ISO 9001 Certified Company

"Venkateshwara House", S.No.: 114/A/2, Pune - Sinhagad Road, Pune - 411 030 (India)

Tel : +91- 20-24251803 Fax : +91-20-24251060 / 24251077 www.venkys.com e-mail : ahp@venkys.com

The Edit

AVIAN INFLUENZA : CAUTION NEEDED, BUT PANIC IS UNWARRANTED

The recent outbreak of avian influenza in Andhra Pradesh has understandably raised public concern. However, it's crucial to approach the situation with informed caution rather than succumbing to undue panic.

In response to the outbreak, Telangana has proactively implemented measures to prevent the virus's spread. While these precautions are necessary, it's important to recognize that experts consider the current strain of avian influenza to be less virulent. They advise against panic, noting that the virus is likely to diminish with time.

Despite these assurances, misinformation has led to a significant decline in poultry consumption. Reports indicate that chicken prices have plummeted, severely impacting the poultry industry.

To address public fears and stabilise the market, the poultry industry must take decisive action. First and foremost, transparent communication is essential. Dissemination of accurate information about the virus, its transmission, and the safety of consuming properly cooked poultry products can help alleviate consumer concerns. Implementing rigorous biosecurity protocols is non-negotiable and by demonstrating a commitment to these practices, the industry can rebuild consumer trust. Moreover, engaging with the media to counteract misinformation is vital. Educational campaigns that inform the public about the actual risks and preventive measures can play a significant role in restoring confidence.

In conclusion, while the avian influenza outbreak necessitates vigilance, it's imperative to balance caution with informed action. Through transparency, stringent safety measures, and proactive public engagement, the poultry industry can navigate this challenge and mitigate unwarranted fears.

G. N. Ghosh
Managing Editor

Venworld®
THE BEST IN ANIMAL HEALTHCARE

Marek's Disease Vaccine, Live, Bivalent (HVT & SB1), Cell Associated

Designed to Confer Protection against very virulent Marek's Disease in Poultry

VENTRI BIOLOGICALS
(Vaccine Division of VHPL)

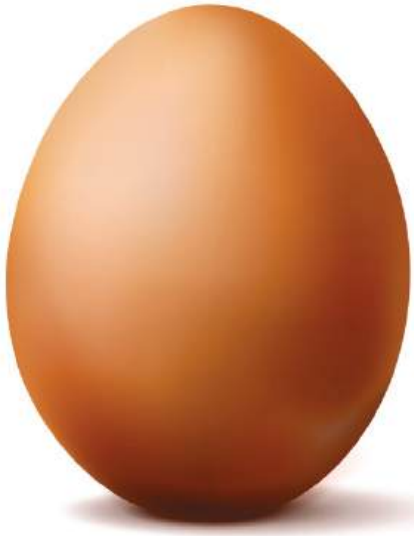
'Venkateshwara House', S. No. 114/A/2, Pune Sinhagad Road, Pune 411030. **Tel.:** +91 (020) 24251803, **Fax:** +91-20-24251060 / 24251077.

Email: ventri.biologicals@venkys.com

www.venkys.com

VENTRI

Ganga
Best Quality Symbol GROUP



IDEAL EGGS:-

Clean, Free of cracks, correct shape, within acceptable weight range...

Better Uniformity (No runts/stunts)

GANGA HATCHERIES

We deal in only 430Y hatching eggs

Our Hatching eggs are free from vertically transmissible diseases like the Fowl Typhoid, Mycoplasmosis, Reo, Adeno, CAV etc.

Ganga
Best Quality Symbol GROUP

Corporate Office:
Village Bhalsi,
Near Ganga Filling Station (NAYARA)
Panipat 132113, Haryana (India)
Mob.: +91-94160-00350
E-mail: gangahatcheries@gmail.com
Web: www.gangagroup.org.in

Vencobb

Indian Research

Effects of Clay Binders on Performance and Health of Broiler Chickens During Multiple Mycotoxin Challenge

By
V. Malathi[1], P. Dodamanr, V. Deepthi[2], Il. V. L. N. Swamy[3], L. I>inedaiaml V. Man[3]
[1]I1Department of I.PM, Veterinary College. Shivamogga, KVAFSU (B), Karnataka . [2]Department of LPM, Veterinary College, Bangalore, KVAFSI (B)

Presence of mycotoxins in feed viz., Aflatoxin, Ochratoxin and T2 cause considerable economic losses and health problems. Many approaches have been tried to counteract mycotoxicosis in chicken, including use of mycotoxin binders. A biological trial was conducted for 42 days with 1050 day old broiler chicks to evaluate the efficacy of clay binder to ameliorating the toxicological effects of multiple mycotoxins, in comparison with other binders. The birds were assigned to seven groups with 150 in each group allocated to 10 replicates each at random. Group 1 was the negative control, group 2 was positive control, challenged with low levels of multiple mycotoxins (Aflatoxin I25 ppb, Ochratoxin 100 ppb. T2 toxin 100 ppb). Groups 3, 4 and 5 were smectite clay binders, 6 and 7 were positive controls supplemented with commercially available binders. Boiler chickens challenged with multiple mycotoxins significantly reduced body weight gain, feed intake and efficiency, caused liver and kidney damage increasing serum levels of AST, ALT. GGT, Creatinine and BUN. Further, the toxin challenge reduced antibody titre against ND and IBD virus and antioxidant status (reduced serum MDA and increased SOD). Supplementation of smectite clay binders significantly improved growth performance, liver and kidney function and antioxidant status. Tissue damage of visceral organs as recorded in histopathological observations was considerably reduced with supplementation of smectite clay binders. Among the different binders tested, smectite clay binders (Binders 3 and 4) were found to be better in ameliorating most of the negative effects of toxin challenge.

Use of Monoglycerides Supplementation in Diets on Serum Biochemicals and Gut Health in Broilers

By
K. K. Khosc*, M. G. Nikam, R. N. Waghmarc, P. V. Nandedkar and A. C. Adkine
Department of Poultry Science. College of Veterinary and Animal Sciences. MAIF SFU, Parbhani (VIS)

*A*pplication of monoglycerides through feed or water improves the health status of poultry and contributes to the mitigation of antibiotic use in poultry production. In view of this, the present experiment was conducted on 300 Vencobb-400 straight run broiler chicks for the period of six weeks. The day-old broiler chicks were randomly divided into four treatment groups having four replicates of 25 birds each. The treatment group TI received basal diet as control group, group T2 received diet containing Monolaurin @ 1 kg per ton of feed and T3 received diet containing Monopropionin (Monoguard) @ 1 kg per ton of feed. There were non-significant differences in all treatment groups for the mean serum values of total protein, albumin, globulin, cholesterol, triglycerides, calcium and phosphorus at the end of 3rdand 6th weeks. However, the values of triglycerides and cholesterol in treatment groups T2 and T3 were numerically reduced compared to control group at the end of 3rd and 6th weeks. At the end of 6th week, the total viable count (TVC) and Staphylococcus spp. count in treatment group T3 was significant!) (P<0.05) reduced as compared to control group. Whereas, E. coli and Streptococcus spp. counts were significant) (P<0.0l) reduced in treatment groups T2 and 13 compared to control group. The Salmonella spp. was not detected in all treatment groups. The Clostridium spp. count at T1 dilution was found positive in treatment groups T1, T2 and T3 with 87.50%, 37.50 and 50.00%. respectively. Thus, it was concluded that the supplementation of Monolaurin @ 1 kg per ton and Monopropionin @ 1 kg per ton of feed in broiler diet helps to increase overall gut health by reducing the count of TVC, E. coli, Staphylococcus spp.,Streptococcus spp., and Clostridium spp. in broilers.

Comparative Analysis of Resistance to Salmonella Enterica Serovar Enteritidis in Guinea Fowl and Chicken

By
K. K. Khosc*, M. G. Nikam, R. N. Waghmarc, P. V. Nandedkar and A. C. Adkine
Department of Poultry Science. College of Veterinary and Animal Sciences. MAIF SFU, Parbhani (VIS)

The nature of the challenge presented by infectious disease in poultry industry is continuously changing as the result of environmental change, pathogen evolution, changes in rearing and market legislation. Bearing these points in focus, the ultimate aim of our research is to generate essential knowledge on mechanism of disease resistance to reduce the economic burden and zoonotic threat that accompany infectious diseases. Therefore, in present study the In-vitro mRNA expression kinetics of different cytokine genes, in Salmonella enterica serovar Enteritidis(SE) induced and un-inducedspleenocytes of guinea fowl (GF) and chicken (Ck) was estimated using Real Time PCR. In terms of fold change, the expressions of IL-I ß. IL-6 and II.-10 were up-regulated in induced spleenocytes in GF relative to those of Ck. In contrast the expressions of TGF- ß4 and TNF-a were down-regulated in GF relative to those of BC. Interestingly, the expression of the IL-10 (Th2) cytokine was exceptionally higher in GF than Ck. Finally, the study has revealed that the guinea fowl has higher resistance to Salmonella enterica serovar Enteritidis (SE) compared to chicken may be due to the higher expression of pro-inflammatory cytokines and unique pattern of IL-10 expression in guinea fowl.

Source: XXXVII Indian Poultry Science Association Conference, Nov' 2022

Research Abroad

Factors Affecting Starch Digestibility Rate of Maize Grain in Poultry

D. Zurak, D. Vlajsović, M. Duvnjak, K. Salajpal & K. Kljak
Department of Animal Nutrition, University of Zagreb Faculty of Agriculture, Zagreb, Croatia; bDepartment of Animal Science, University of Zagreb Faculty of Agriculture Zagreb, Croatia

Summary

Maize, the most common energy feed ingredient in poultry diets, has a high starch proportion in the grain endosperm, ranging from 65 to 75% in various hybrids. The rate and extent of digestion are major determinants of maize starch nutritive value. Starch digestion follows the first-order kinetics, and according to the digestibility kinetics, starch can be divided into rapidly digestible (RDS), slowly digestible (SDS), and resistant starch (RS). Different intrinsic and extrinsic features of maize grain affect the rate and extent of starch digestibility. Differences in starch granule composition, such as amylose-to-amylopectin ratio, crystallisation, association with lipids and zeins, as well as shape, size and presence of surface pores affect starch digestibility kinetics. More so, an important factor affecting digestion is grain processing. Particle size affects feed intake, the passage of bolus and susceptibility to enzyme-starch binding, while hydrothermal processing leads to starch gelatinisation. However, too high temperatures can lead to RS formation. This review summarises the available literature data on factors identified as crucial in the digestibility kinetics of maize starch.

Conclusion

Determination of starch digestion kinetics provides information on the rate of content of RDS, SDS and RS, allowing better prediction of digestion and energy utilisation in poultry. Indeed, broilers grew faster and more efficiently when fed a diet containing SDS, allowing starch to digest longer in the small intestine and saving amino acids for protein deposition. Most in vitro studies indicate that the structure of the starch-protein matrix affects the proportion of a particular starch fraction. Maize hybrids differ in the proportion of floury and vitreous endosperm, the different properties of which influence the particle size distribution, morphology and physico-chemical properties of the starch. Despite the apparent importance of the maize starch properties determined in vivo. They are rarely studied in thein vivo experiments, so it is not possible to elucidate the mechanisms responsible for the differences in maize starch digestibility in vivo. Although starch components have been shown to affect digestibility in some cases, other factors such as age, the development of the digestive organs and the influence of the gut microbiota also need to be considered. In addition, the exact mechanism underlying the action of the above starch components should be determined in order to distinguish whether it is an individual or combined effect. However, the adverse effects observed in young poultry do not effect maize starch digestibility and overall production performance in older birds. Among the extrinsic factors, the greater effect of coarse grinding of maize grains in laying hens compared to broilers, in which starch digestibility is not significantly affected by feed particle size, could be related to higher feed intake and consequently increased nutrient flow in the digestive tract of broilers. Also hydrothermal processing disrupts starch structure, causing gelatinisation and allowing greater exposure of starch to digestive enzymes. However, the hardness of maize and the temperature applied must be considered to prevent retrograded starch formation. In addition, high temperature during extrusion seems to negatively affect maize starch structure due to RS formation that reduces starch digestibility.

Adaptation of Chicken Pancreatic Secretory Functions to Feed Composition

V. G. Vertiprakhov[a], A. A. Grozina[b], V. I. Fisinin[b] & P. F. Surai[c]
[a]Moscow Timiryazev Agricultural Academy, Russian State Agrarian University, Moscow, Russia; [b]Department of Physiology and Biochemistry, Federal Scientific Centre "All-Russian Research and Technological Poultry Institute" of Russian Academy of Sciences, Sergiev, Posad, Russia; [c]Department of Biochemistry, Vitagene and Health Research Centre, Bristol, UK.

Summary

Poultry farming is the fastest growing sector of agriculture. Balanced diets are an important factor for realisation of the genetic potential of birds. The pancreas plays an important role in the digestive process. The aim of the review is to describe the adaptation of chicken pancreatic secretory functions to a diet with various protein and fat ingredients. Due to the fact that digestive enzymes correlate with nutrient absorption, basic knowledge of pancreatic secretion can be useful to improve poultry nutrition and the economics of the poultry industry in general. The consumption of soy cake instead of sunflower cake (with a 1.5% increase in dietary crude fat) led to an increase in the activity of pancreatic juice lipase by 33.8%. A slight increase in crude protein in the feed (by 0.5%) led to an increase in proteolytic activity by 28.1% compared to the background period. The consumption of sunflower oil instead of soybean, rapeseed and linseed oil in the diet led to a decrease in the activity of pancreatic juice lipase by 42.2%, 57.6% and 19.1%, respectively. It could be concluded that in chickens there is no strict parallelism in the release of the pancreatic enzymes and there is no clear adaptation to a specific feed component.

Conclusion

To date, there is still a paucity of knowledge on the adaptation of pancreatic exocrine function to a diet composition. In particular, experimented data show that activities of pancreatic enzymes respond to protein and lipid dietary manipulation in a peculiar way. There is no strict parallelism in the release of all enzymes and there is no clear adaptation to a specific feed component. The novelty of the study is related to a comprehensive analysis of recently obtained new data on composition and enzymatic activity of pure pancreatic juice obtained in chronic experiments with successfully operated chickens. It could be concluded that when studying the availability of individual components of a diet, it is necessary to take into account a fact that nutrients digestibility of absorption do not always run in parallel.

Source : World's Poultry Science Journal

trouw nutrition
a Nutreco company

Feeding the future with integrated Feed-to-Food Safety Program

Holistic approach for Mycotoxin Risk Management

Toxo®-MX

Toxo®

Toxo®-XL

Feed Processing and Quality Management

Fylax® Flow

Fylax® Forte

Scan the code for latest updates

Trouw Nutrition India Pvt. Ltd
Unit no. L4 04, SLN Terminus, Beside Botanical Garden,
Gachibowli, Hyderabad, Telangana – 500032 T. +91 40 2988 0258
E: customercareindia@trouwnutrition.com W: www.trouwnutrition.in

Article

Delivering Excellence in Poultry Feed Analysis: Empowering Farmers with Advanced Technologies

Dr. Pothanna
Technical Manager
Trouw Nutrition South Asia

Poultry feed analysis is an essential aspect of the poultry industry, playing a crucial role in bird health, productivity, and profitability. By ensuring that poultry receive a well-balanced diet, feed analysis helps optimise growth rates, egg production, and overall health, ultimately contributing to the success of poultry farming. However, several challenges can affect the accuracy and effectiveness of feed analysis, leading to adverse effects on poultry performance.

One of the key challenges in poultry feed analysis is nutrient imbalances. Incorrect levels of protein, energy, vitamins, and minerals in the feed can result in poor growth, low egg production, and various health problems in poultry. Proper formulation and regular analysis are necessary to avoid such imbalances and ensure that poultry receive the right nutrition for optimal performance.

Another significant concern is mycotoxin contamination. Mycotoxins, such as aflatoxins and ochratoxins, are toxic compounds produced by fungi in contaminated feed ingredients. These toxins can severely compromise liver health, immune function, and overall productivity, making it vital to monitor feed for mycotoxin contamination and use appropriate mitigation strategies like binders to safeguard poultry health.

Poor feed storage is another critical issue that can negatively impact feed quality. Inadequate storage conditions, such as exposure to moisture or high temperatures, can lead to spoilage, nutrient degradation, and increased contamination risks. Proper storage practices are essential to maintaining feed quality and ensuring that poultry receive the full nutritional benefit from their feed.

Finally, water quality is often overlooked but plays a vital role in poultry health and feed utilisation. Suboptimal water quality can hinder digestion, reduce feed intake, and negatively affect overall bird health. Regular monitoring and management of water quality are necessary to ensure that poultry are properly hydrated and able to efficiently process their feed.

Traditional feed analysis methods can be time-consuming, making it difficult to quickly address feed quality issues. Embracing newer technologies is essential for improving efficiency. Trouw Nutrition offers advanced solutions that provide faster, more accurate results, enabling timely adjustments to feed formulations. Their innovative tools, like real-time mycotoxin detection and automated nutrient analysis, help optimise poultry health and productivity.

By addressing these challenges through regular feed analysis and proactive management practices, poultry producers can enhance the health and productivity of their birds, ultimately improving profitability and sustainability in the industry.

Advanced Feed Analysis Services

1. dNIR Technology: Precision at Your Fingertips

The dNIR (dynamic Near Infrared Reflectance) technology is a game-changer in feed analysis. This portable, on-site tool delivers rapid and precise nutrient profiling of feed ingredients and finished feed. Key features and benefits include:

- Real-time Results: Obtain nutrient profiles such as moisture, protein, fat, and fiber content within minutes.
- Enhanced Accuracy: dNIR ensures reliable data, helping farmers fine-tune feed formulations to meet specific nutritional requirements.
- Cost Efficiency: Reduces dependency on external laboratories, saving time and resources.

2. Mycotoxin Analysis

Mycotoxins are toxic compounds produced by fungi that exhibit a high degree of polarity. This polarity arises from regions of partial positive and negative charges within their molecular structure, typically due to the presence of functional groups such as hydroxyl (-OH), carboxyl (-COOH), or ketone (C=O). These functional groups enable mycotoxins to interact with water molecules via hydrogen bonding, making them soluble in water and other polar solvents.

One of the key characteristics of polar toxins is their high solubility in water. Due to their ability to form hydrogen bonds with water molecules, these toxins tend to dissolve easily in aqueous environments. This property makes them more amenable to extraction using water-based solvents and subsequent analysis.

Additionally, polar toxins are generally less volatile compared to non-polar toxins. Because they are more stable in aqueous solutions and do not easily vaporise, they tend to be more persistent in the environment and are typically detected through liquid-based analytical techniques.

Non-polar mycotoxins lack significant dipoles, meaning they do not have distinct positive and negative charge regions. As a result, they are hydrophobic (water-insoluble) and do not dissolve in water. Instead, they are more soluble in non-polar solvents like hexane, chloroform, and oils. These toxins are typically more volatile than polar ones, meaning they can evaporate more easily. Additionally, non-polar mycotoxins are more likely to accumulate in fatty tissues within animals or humans due to their affinity for lipids.

Non-polar toxins can be detected using various methods, such as TLC, HPLC, ELISA, and GC-MS, with GC-MS being considered the gold standard. This is because GC-MS offers unmatched sensitivity, accuracy, and the ability to precisely identify and quantify non-polar toxins. It separates compounds based on their volatility, confirming the presence of these toxins even at very low concentrations, making it the ideal method for detailed analysis.

While GC-MS is the most reliable method, other techniques like TLC are useful for initial screenings. TLC is cost-effective and fast but lacks the precision and sensitivity that GC-MS provides. HPLC and ELISA are also used, but they offer less sensitivity and are not as reliable for confirming the presence of non-polar toxins in complex samples.

Technique	Principle	Applications	Advantages	Specificity	Sensitivity
TLC	Chromatographic separation on a solid surface	Preliminary screening	Simple, low-cost, minimal equipment required	Moderate (qualitative, broad analysis)	Low (poor detection limits)
ELISA	Immunoassay using antibodies for detection	Detecting specific toxins	Specific, cost-effective, easy to perform	High (specific antibodies for target toxins)	Moderate (sensitive for known targets)
LC-MS	Chromatographic separation + mass spectrometry	Complex, polar samples (e.g., mycotoxins)	Highly sensitive and precise	Very high (identifies compounds by mass/structure)	Very high (low detection limits)
GC-MS	Chromatographic separation + mass spectrometry	Volatile compounds (e.g., aflatoxins)	Highly sensitive for volatile compounds	High (effective for volatile compounds)	High (low detection limits)
HPLC	Chromatographic separation using liquid phase	Polar and non-volatile compounds	Suitable for various compounds	Moderate to high (polar compounds)	Moderate (lower sensitivity than LC-MS)
Lateral Flow	Immunoassay using antibody-coated particles	On-site screening of mycotoxins	Rapid, portable, cost-effective	Moderate (specific for known toxins)	Low (qualitative or semi-quantitative)

3. Moisture Dosing System in Feed Mills

A moisture dosing system in feed mills is an advanced solution designed to precisely apply liquid additives for improved feed production. It ensures accurate dosing and uniform distribution of essential liquids, enhancing batch consistency and optimising moisture levels, which is critical for achieving the desired feed quality. Proper moisture optimisation improves pellet durability, reduces fines, and minimises energy consumption during production.

Additionally, by maintaining optimal moisture levels, the system helps control mould growth, thereby reducing the risk of mycotoxin contamination. This contributes to safer feed, enhanced livestock health, and compliance with regulatory standards, making the moisture dosing system an indispensable tool for modern feed mills.

4. Water Analysis and Microbiological Testing for Animal Health

Regular water testing and microbiological checks are very important for keeping animals healthy and safe. Water analysis checks things like pH, alkalinity, hardness, TDS concentration, and harmful substances to make sure the water is safe for animals to drink. Microbiological testing looks for organisms like bacteria, fungi, and moulds that can harm animals. These tests help prevent diseases by finding germs like E. coli and Salmonella. Keeping water quality high with these tests is key to protecting animal health, preventing contamination, and meeting safety rules.

Conclusion

Trouw Nutrition provides solutions to improve poultry health and productivity. The NOA-F Series optimises feed formulations, while Mycomaster detects mycotoxins like aflatoxins. The Moisture Dosing System (MDS) ensures proper feed moisture, and SELKO Inline monitors water quality for better feed efficiency. Their Customer Service Laboratory offers feed testing and analysis, and Microbial Analysis ensures safe feed and water. These services help farmers boost poultry health, productivity, and sustainability.

Trouw Nutrition -Services


NOA-F series


Mycomaster


MDS


Selko Inline

BAADER

Flexibility, Precision and Consistency

High Yield Cut-Up

The BAADER ProFlex solutions are fully automatic and highly precise cut-up systems that offer the processing flexibility that you need to match your daily sales orders.

- Precise cutting at high speed
- Numerous cut-up modules to match your market requirements
- Flexibility to process a variety of end-products on the same cut-up line
- Automation to ensure quality consistency
- BAADER production management software to ensure best use of the incoming product.

Explore our website: www.baader.com

Or contact the local
BAADER Asia office on
+65 9127 0244
ba-asia@baader.com

BAADER Food Systems Denmark A/S / +45 8623 1455 / bfs-dk@baader.com / www.baader.com

IMPACT OF INFECTIOUS DISEASES AND METABOLIC SYNDROMES

Quickly recognising the signs and symptoms of diseases and disorders is essential for corrective actions and prevention in poultry for broiler breeders. Having good management of feeding and nutrition, as well as biosecurity and vaccination programs in place can help prevent disorders and eradicate or limit the spread of diseases, says the expert team at Aviagen. IPR relates their findings

The most prevalent infectious diseases and metabolic syndromes of poultry, which can negatively impact the welfare of the birds and cause economic losses to producers, are continuing to evolve worldwide. It is also important to consider the role that migratory birds, rodents, pests and the global movement of people, among other factors, play in regulating these conditions.

Infectious Diseases

Mycoplasma synoviae (MS) has persisted despite improved approaches to controlling and monitoring the disease. In addition, MS often presents as a silent infection, where broiler breeder flocks may seroconvert (test positive serologically) with no sign of illness or negative impact on performance, making it difficult to assess. MS has re-emerged due to a decrease in antibiotic

(AB) use and the occurrence of more pathogenic strains. These strains can cause the typical synovitis issues (swollen joints and footpads), secondary respiratory issues (especially in broilers) and a fairly new effect on eggs called Eggshell Apex Abnormalities (EAA) or Top Coning (Figure 1). EAA more often affects commercial layers but has also been seen in broiler breeders.

Figure 1. Egg shell abnormalities (EAA) or "top coning" caused by MS infection in hens.

A decrease in AB use to control Mycoplasma infections coincides with more companies starting antibiotic-free programs (ABF), minimising AB use or the ban of AB (all or specific) in some countries. Reduced AB use has led to more flocks showing seroconversion. Initially, a few live Mycoplasma gallisepticum (MG) vaccines were introduced worldwide, which seemed to work well against MG, and were cost-effective. Many producers used these live MG vaccines and subsequently stopped using continuous AB in feed to control MS. As a result, MS seemed to re-emerge and thrive. More recently, live MS vaccines have been introduced, and some broiler companies have started using these in conjunction with MG vaccines in their broiler breeders.

As companies become more conscious about biosecurity and more affordable testing becomes available, more MS infections are detected. Good biosecurity practices and management of MS-free breeding stock must be active decisions in the process to eradicate this disease.

Coccidiosis is most commonly seen due to improper management of birds after vaccination with live coccidiosis vaccines. Coccidiosis control starts with vaccination at the hatchery (most common) or on farm. The vaccine must be properly handled, never frozen and applied correctly, ensuring that when applied in the hatchery, that chicks are well covered, and the oocysts do not settle out of solution. Even with the best vaccine application, the farm must have the correct environmental conditions for proper sporulation of oocysts and vaccine cycling within the birds and the house. Adequate cycling of oocysts does not occur if the litter is too dry or too wet, if the bird density is too high or too lower if anticoccidial medications are used. If one or more of these occur, birds can either have too much of a reaction causing coccidiosis issues early (usually 14-30 days of age) or, if not exposed to enough vaccine and recycling in the litter, the result is typically a coccidiosis outbreak later in life (6-20 weeks of age). Coccidiosis outbreaks may also occurdue to severe immunosuppression from a simultaneous or recent infection such as Marek's Disease Virus (MDV) or Chicken Anemia Virus (CAV).

Viscerotrophic Velogenic Newcastle Disease (VVND) is a form of Exotic Newcastle Disease (END) and is are respiratory virus recognised in many regions. In areas where it is widespread, birds must be vaccinated to protect against morbidity, mortality and egg production drops. If unvaccinated birds are exposed, the result can be similar to highly pathogenic avian influenza (HPAI), resulting in morbidity/mortality of 90-100%.

Vaccination programs for VVND are a combination of live and killed vaccines to induce very high protective titers. Poor quality vaccines, poor vaccination technique or insufficient vaccination can result in antibody titers not being fully protective against morbidity, mortality and egg drops. If birds are not fully protected, it is common to see minor egg production drops (5-15%) and a slight increase in mortality (0.5-1.0%). Symptoms can present as:

- Torticollis (wry neck or twisted neck, especially during rear)
- Petechial hemorrhages in the trachea, proventriculus, intestines, cecal tonsils and sometimes the brain
- A sudden increase in Newcastle disease virus (NDV) titers

Egg quality problems such as thin shells and white colour (more noticeable in brown eggs) can also be seen with an accompanying drop in egg production. Good biosecurity is key to keeping this disease out of the flock, along with a good vaccination program to give fully protective titers.

Histomoniasis ("Blackhead") is primarily reported in the US but has recently been reported throughout the EU, Asia, and Latin America. In many regions, the removal of all preventative medications and effective treatments has caused an increase in the incidence of Blackhead.

The presence of dirt floors and/or re-used litter makes it more difficult to completely clean and disinfect a house between flocks and control secondary carriers, such as cecal worms (Figure 2) and earthworms, known to harbour the histomonas protozoan organism. There is good evidence that darkling beetles can also carry the organism, and ithas been theorised that direct transmission between birds is possible. Therefore, the best way to prevent or control Blackhead is by effective cleaning and disinfection. In instances where dirt floors and/or re-used litter are present, floors should, at a minimum, be treated with one of the following on top of the floor before spreading litter material:

- Iodine and acid with salt (such as sodium hypochlorite)
- A combination of salt and lime
- Organic acid and iodine

In addition, crates used to transport birds must be cleaned, as birds have been shown to contract histomoniasis from equipment.

Figure 2. Cecal worms (Heterakis gallinarum) passed in feces.

Blackhead has been observed as early as 13 days of age in poultry. Therefore, frequent and early treatment for internal parasites is very effective. Treatment entails medicating as many as 4-5 times before production begins and using morethan one anti-parasitic medication to prevent resistance. Treating for more

than one day may also have benefits: all birds might not get an effective dose with a one-day treatment.

Inclusion Body Hepatitis (IBH) is mostly reported in broilers and is often transmitted horizontally but can be vertically transmitted from parent stock (PS) and sometimes grandparents (GPs) to PS. Typically, young hens become infected during production and vertically shed the virus to their progeny for several weeks. IBH is caused by several serotypes of Fowl Adenovirus Group 1 (FADV1).

Historically, adenoviruses are present in most chicken houses, and most broiler breeder flocks naturally seroconvert to FADV1 before the onset of production. The issue occurs when pullets are placed in a new or very clean rearing house and are not exposed to FADV1 before the onset of production, leaving them without immunity when exposed to the virus in the laying house. For this reason, it is also called "new house" or "clean house" syndrome. In recent years, the risk of pullets seroconverting to FADV1 has decreased due to better biosecurity and cleaning and disinfection practices to control diseases such as Avian Influenza (AI) and avian salmonellosis.

Broiler breeders, not naturally seroconverted or vaccinated in rear but exposed during lay, usually do not show any signs of disease. Still, their progeny is at greater risk of IBH from vertical transmission for 4-6 weeks after the PS flock is exposed. If this becomes a chronic issue, birds must be vaccinated with a killed vaccine containing the specific serotypes seen in the flock.

Avian Influenza (H9N2) is caused by avian influenza virus serotype H9N2 and sometimes H9N3. It is seen throughout Asia, the Middle East and Europe (EU). The virus causes a mild respiratory infection with a slight increase in mortality (0.5-1.0% a week for a few weeks) in broiler breeders. If complications occur with other respiratory diseases such as NDV, IBV, MG/MS and/or bad environmental conditions (too cold or too hot, high ammonia), symptoms could worsen.

A severe egg production drop that never fully recovers to pre-infected levels is seen in unvaccinated birds. Typically, the egg production drop is approximately 30-50% over several days and takes 2-3 weeks to recover. The hens' reproductive tract is also affected, leading to eggshell quality issues such as soft-shelled eggs. If H9N2 becomes prevalent in a region, birds must be vaccinated with a killed vaccine, if an approved vaccine is available. The best protection is achieved using the local area's strains in the vaccine.

Infectious Bronchitis Virus (IBV) could be the most common disease seen in broiler breeders and broilers. Most companies vaccinate for IBV because minor egg drops (usually 5-15%) and cull eggs, along with respiratory signs, arelikely to occur without proper protection.

There are many IBV variants seen around the world. If there is evidence of IBV variant strains in a specific area, vaccinations (usually live primers) for these variants should be included, if available, in the vaccination program toincrease the spectrum of protection. If there is very early exposure in the first 2-3 weeks to a severe variant (like QX) without proper vaccination, it could lead to non-laying chickens ("blind layers" or "false layers"), caused by early damage to the oviduct.

Metabolic Syndromes and Diseases

Many metabolic syndromes have the following predisposing factors related to the transfer of birds from the rear to the laying phase:

- Poor flock body-weight uniformity
- Lighter than recommended body weight
- Earlier than recommended transfer to the lay house

After photostimulation, diet formulae are often changed and feed volumes increased. As a result, the predisposing factors listed above can adversely affect bird metabolism and sexual development. Called an "overfeeding complex", it is associated with various metabolic problems that can occur individually or in conjunction, leading to lower livability of the flock and poor live production performance.

Multiple Follicular Hierarchies result when birds are overfed, causing changes in the ovary and resulting in the overproduction of follicles.

A typical follicular hierarchy in control-fed breeding hens consists of the recruitment and development of no more than eight follicles. This phenomenon is known as multiple follicular hierarchies (Figure 3). These multiple follicular hierarchies can result in superovulation and the alteration of egg production. According to scientific research, for every extra follicle at sexual maturity, the bird produces ten fewer eggs during its productive life.

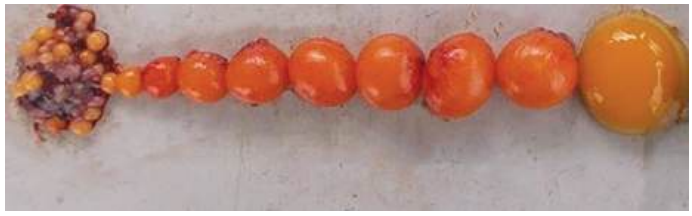


Figure 3. Multiple follicular hierarchies with the ovary.

As a result of superovulation, erratic oviposition and defective egg syndrome (EODES) can occur (Figure 4). EODES can progress further to oviduct impaction (Figure 5), setting the stage for abdominal or internal laying and salpingitis- peritonitis (Figure 6).

Figure 4. Too many follicles as a result of superovulation (EODES).

Figure 5. Salpingitis with caseous egg yolk fromthe oviduct.

Figure 6. Salpingitis and impacted oviduct.

Peritonitis is the predominant reproductive disease causing mortality in broiler breeders. It is an acute disease with a sudden increase in mortality, especially at the beginning of egg production, and may persist until after peak. The main clinical signs are mortality, particularly in the morning hours, of hens in good condition without clinical signs of any disease. At necropsy, purulent (pus-filled) material around the ovaries and the abdominal cavity is seen. Due to internal/abdominal laying, it is sometimes referred to as Egg Yolk Peritonitis (Figure 7).

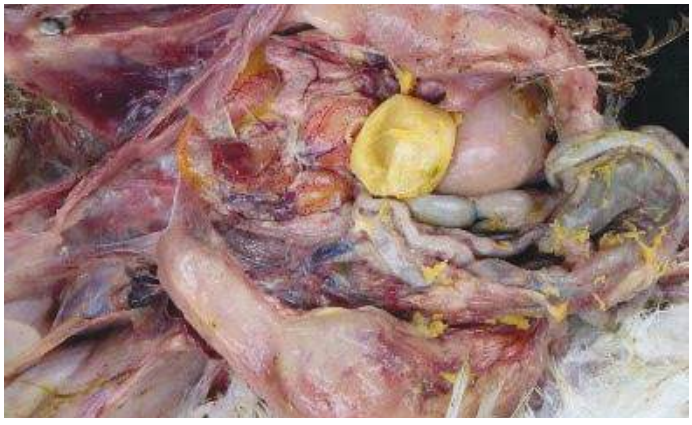


Figure 7. Egg yolk peritonitis, egg yolk is found around organs upon necropsy.

Peritonitis is multifactorial and caused by:

- Poor water quality
- Primary infections (E. coli, Cholera, Salmonella)
- Secondary infections due to immunosuppressive and respiratory diseases
- Poor house/bird management
- Multiple Follicular Hierarchy or EODES

In general, peritonitis can be prevented by:

- Managing litter and nest conditions
- Vaccinating with a live or killed E. coli vaccine

To prevent overfeeding and the development of peritonitis, it is critical to control body-weight gain and uniformity during rear.

Prolapse is commonly observed at the onset of production in flocks with poor body-weight uniformity. Prolapse and subsequent peck-out can result in cannibalism and occurs more often in spring/summer due to the excessive light stimulus. Feed increases that are too large after photostimulation and before peak production are associated with an earlier than desired start of production and higher rates of double-yolk eggs that can also cause cloacal prolapse. Therefore, small but frequent feed increases to peak feeding are recommended after photostimulation. Prolapse and peck-out have also been observed in flocks 40 to 50 weeks of age with excessive weight (Figure 8). In this case, abdominal fat may alter the correct return of the cloacal mucosa after laying.

Figure 8. A peck-out that resulted in the extraction of internal organs. An internal blood clot is often observed upon necropsy.

Calcium Tetany or hypocalcemia (low blood calcium [Ca]) occurs in broiler breeders that have not started egg production and are fed high Ca levels (>1.2%). The high Ca levels trigger a metabolic mechanism (negative feedback) that limits optimal storage and Ca transport from the bone for eggshell formation. It typically occurs acutely with symptoms and clinical signs early in the morning, at the start of the day. Birds gasp and open their wings when hot, show weakness and depression, progressing towards paralysis and extension of the legs backward; sometimes, seizures can occur. As leg paralysis progresses and hens squat down in the scratching area, over-mating may occur, potentially leading to mortality. At necropsy, lesions are non-specific, often associated with active ovaries (multiple follicular hierarchies) and the presence of partially or fully formed eggs in the oviduct with follicular congestion (Figure 9).

Figure 9. Calcium tetany - presence of partially or fully formed eggs in the oviduct with lung and follicular congestion.

Calcium tetany occurs in young broiler breeder hens between 25 and 34 weeks of age, especially flocks with poor uniformity, which have been photostimulated too soon and have been given a production diet with high Ca levels. Although less common, calcium tetany can also occur when production diets are formulated to contain lower than recommended Ca levels.

Hypocalcemia can be treated with Ca supplementation. Ca can be increased in the feed or by manual distribution of oyster shell. It is important to avoid Ca overdoses, as that would cause toxicity and lead to increased mortality. Prevent calcium tetany by correctly balancing the minerals in the diet (calcium to phosphorus ratio, [Ca:P]) and adjusting age and diet changes. It is also critical to maintain the correct body weight and uniformity during rear.

Fatty Liver and Hemorrhaging Syndrome (FLHS) is a syndrome that occurs mainly in commercial laying hens. However, cases are occasionally seen in broiler breeders. Sudden death from liver rupture has been reported in over-fleshed birds after peak production as they get older, gain weight, and the liver gets fatter. An enlarged, fragile and pale liver is observed at necropsy (Figure 10), accompanied by breast muscle paleness resulting from internal bleeding. The liver can rupture spontaneously or due to trauma as birds enter the nests, perch or experience discomfort.

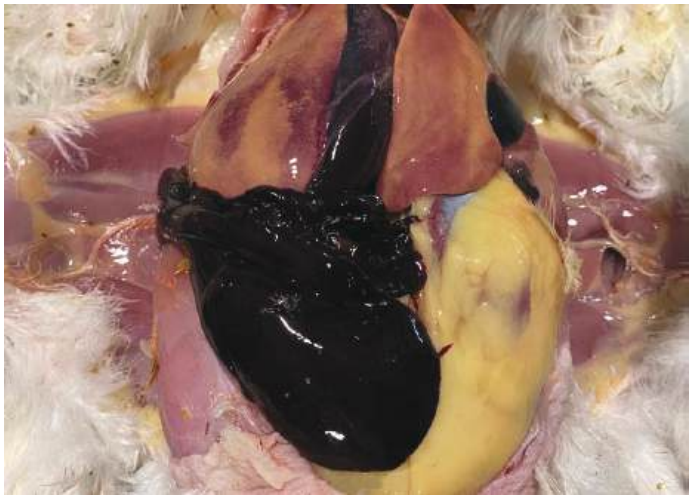


Figure 10. Ruptured and pale liver; blood clotting around the liver indicates rupturing.

Sudden Death Syndrome (SDS) or Re-feeding Syndrome is associated with the over-feeding complex mentioned earlier. Affected hens develop heart problems and changes in electrolyte balance (mainly phosphorus [P] and potassium[K]) that cause sudden death. The sudden increase in mortality occurs as the flock approaches 30% in production. It decreases when the percentage of production reaches 60 to 70%, lasting 1 to 2 weeks in mild to moderate cases. Some common clinical signs include:

- Less flock vocalisation
- Very fluid faecal droppings
- Increased feed clean-up times
- Increased morning mortality

Necropsy lesions consist of pseudo-prolapse, cardiac hypertrophy, widespread internal congestion and hydropericardium with mild ascites (Figure 11). In addition, birds with SDS commonly have low sexual development and immature ovaries (Figure 12).

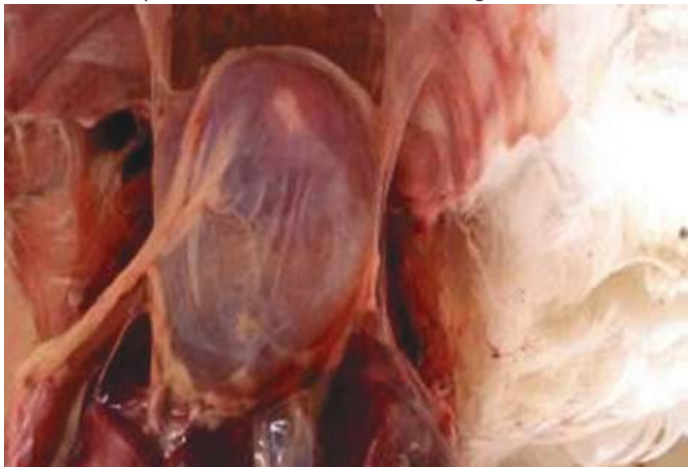


Figure 11. Hydropericardium associated with SDS.

Figure 12. Heart with juvenile ovaries (SDS occurs in younger as well as older birds).

Cardiac hypertrophy is defined as a Heart (g)/Body Weight (kg) ratio >3.5. In hypertrophic hearts, there is increased development of the left ventricle and dilation of the right ventricle generating a notch or slit between the ventricles and the atria.

Situations that lead to the development of SDS include:

- Large percentages of immature hens with low sexual development (small combs and wattles) and poor breast fleshing at transfer
- Rapid and high volume feed increases to achieve early onset and a rapid increase of egg production
- A rapid body-weight gain in conjunction with heart muscle mass gain. Necropsy reveals over-fleshed hens ("plump breast" and "double-breasted hens", (Figure 13))
- Mineral requirements, especially P and K, are altered, and an electrolyte imbalance develops due to rapid body weight and cardiac muscle mass gains
- This deficiency is exacerbated when light birds are fed Breeder 1 diets with higher Ca levels, resulting in heart failure and sudden death

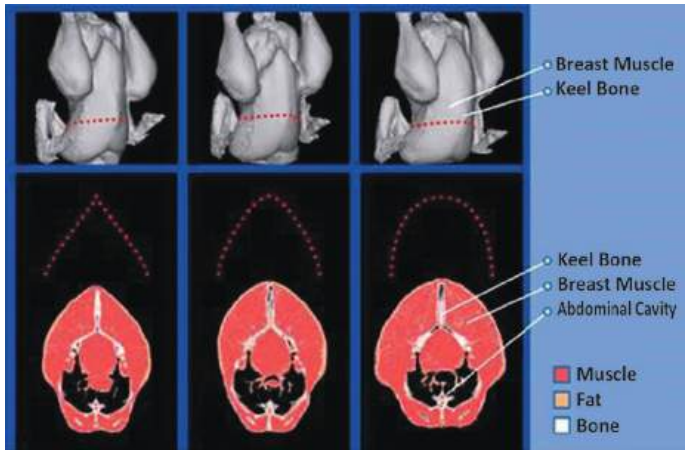


Figure 13. Assessing the shape of the breast in females, under, ideal, and over fleshed.

Contributing factors to SDS include:

- Low protein diets
- Excessive Ca levels
- Low K (hypokalemia occurs)
- Low P (hypophosphatemia occurs)

Correct diagnosis is essential as this syndrome is often confused with calcium tetany. If treated erroneously with Ca supplementation, it can create a Ca:P imbalance and hen mortality.

Preventing Metabolic Syndromes in Broiler Breeders

1. Improve body-weight uniformity

Body-weight uniformity is critical to feed a population of birds accurately. The more uniform the flock, the greater the likelihood that a higher proportion of birds are subjected to optimal feed management and light stimulation. The more variable the weight between birds, the more variable their requirements, reproductive performance and egg shell quality. It is recommended to set targets and indicators and to propose action plans when deviations occur.

2. Avoid pre-lighting or anticipated move to the hen house

Consideration must be given to flock age, sexual maturity, uniformity, and light-proof condition of housing when planning bird move into production house and the age at photostimulation.

3. Avoid overfeeding during critical times after photostimulation

After photostimulation and the resulting increase in circulating sex hormone (estrogen) levels, broiler breeding hens become more sensitive to feed changes. Under this hormonal stimulus, birds convert feed more efficiently, and it is easy to overfeed with increases greater than 3-5 g/week from transfer to the onset of production. After photostimulation, a gradual increase in feed is recommended because the metabolic problems described herein are rooted at this stage.

4. Adjust feeding program for egg production

At the onset of egg production, a feeding program should consider small feed increases when there is low production to avoid overfeeding those birds that are not yet laying. In modern broiler breeders, it is essential to prevent excessive breast development and modulate weekly hen mortality. Therefore, it is critical to follow up by performing a field necropsy and assessing each of these syndromes' relative incidence to take corrective action at the right time.

Conclusion

Many infectious diseases can be prevented with good biosecurity practices and, when available, vaccination. Metabolic diseases can be prevented by understanding the factors that predispose flocks to these conditions and how to avoid them. As the most prevalent infectious diseases and metabolic syndromes of poultry continue to evolve, good feeding and nutrition management, biosecurity, and vaccination programs must be in place for prevention and eradication to occur.

Article

Immense Potential of Livestock Farming in India: Why Young Entrepreneurs are Flocking to Poultry

Amit Saraogi
Managing Director
Anmol Feeds & Founder – PrraniGanga

The livestock industry in India is changing rapidly with poultry farming becoming a centre of entrepreneurial efforts. While poultry farming in India has deep historical roots, the sector started booming in the late 20th century after significant technological advancements. Families in rural India have long kept chicken for their own usage. These native breeds although compatible with the local environment, have very slow growth rates and are known to produce lesser number of eggs. On top of that, limited access to veterinary services and hygiene protocols resulted in regular disease occurrences.

High-yield breeds such as broilers and layers have changed the sector completely by increasing meat and egg production. Modern poultry housing systems and controlled environments have improved growth conditions, leading to better health and productivity. The poultry market in India is expected to expand at a compound annual growth rate (CAGR) of 8.9% from 2024 to 2032. In 2022-23, India exported poultry and related products to 64 nations, earning a revenue of USD 134 million.

A Growing Market with Infinite Possibilities

According to FAOSTAT, 2020, India ranks 3rd in egg and 8th in global meat production. According to the National Action Plan for Egg and Poultry (2022), the poultry market in India is expected to grow at a CAGR of 16% in the next five years. This surge in demand is largely driven by India's growing middle class becoming more health-conscious and increasing their protein intake. However, the annual per capita consumption of poultry meat is still below the global average (17.1kg), at 4.5 kg, and eggs at 81 eggs per person, indicating there is still substantial room for growth.

The industry is seeing a wave of entrepreneurs from top institutions in the country like IITs and IIMs, quit their conventional career routes to explore this expanding agritech sector. Young entrepreneurs from different educational backgrounds are keen to explore the sector given the possibility of higher profits compared to traditional corporate positions. Their interest in digital-centric agribusinesses is helping in make poultry farming operations across the nation more efficient.

Why are Young Entrepreneurs Joining the Poultry Revolution?

- Poultry farming is a smart way for entrepreneurs to start small without big investment. It can generate quick returns and offers high turnover cycles. For instance, it takes only 5-6 weeks for the broiler chickens to reach market weight, which means a continuous cash flow for businesses.
- Between feed production and hatcheries, the B2B growth opportunities in poultry are limitless. Feed comprises about 70% of the production cost, and the ever-rising demand is encouraging entrepreneurs to look for good quality and nutrition-based feed. Another source of income for entrepreneurs is the supply of quality day-old chicks. Notably, India produces over 23 billion eggs annually which means the limitless opportunities for hatcheries. The processed chicken market is growing rapidly in India at a CAGR of 20% mostly due to rapid urbanisation and a growing demand for convenient food
- A key change is the digitalisation of supply chains. Online platforms now provide farmers with direct access to high-quality poultry feed, vaccines, and hatchlings which was unimaginable even a few years back. AI-powered tools help optimise feed conversion ratios, predict disease outbreaks, and improve overall farm productivity. Farmers can now order everything they need with a few taps on their phones
- Under the National Livestock Mission, interest-free loans and grants for infrastructure development are being handed over to entrepreneurs to help them build their own start-ups and scale their poultry business operations
- India's poultry exports, which are mainly done in the Middle East and Southeast Asia, are expected to grow at a steady pace. In FY 2022-23, India exported 75,000 metric tonnes of poultry products, which are likely to go up with the rising global acceptance of Indian poultry

Challenges and How Entrepreneurs are Addressing Them

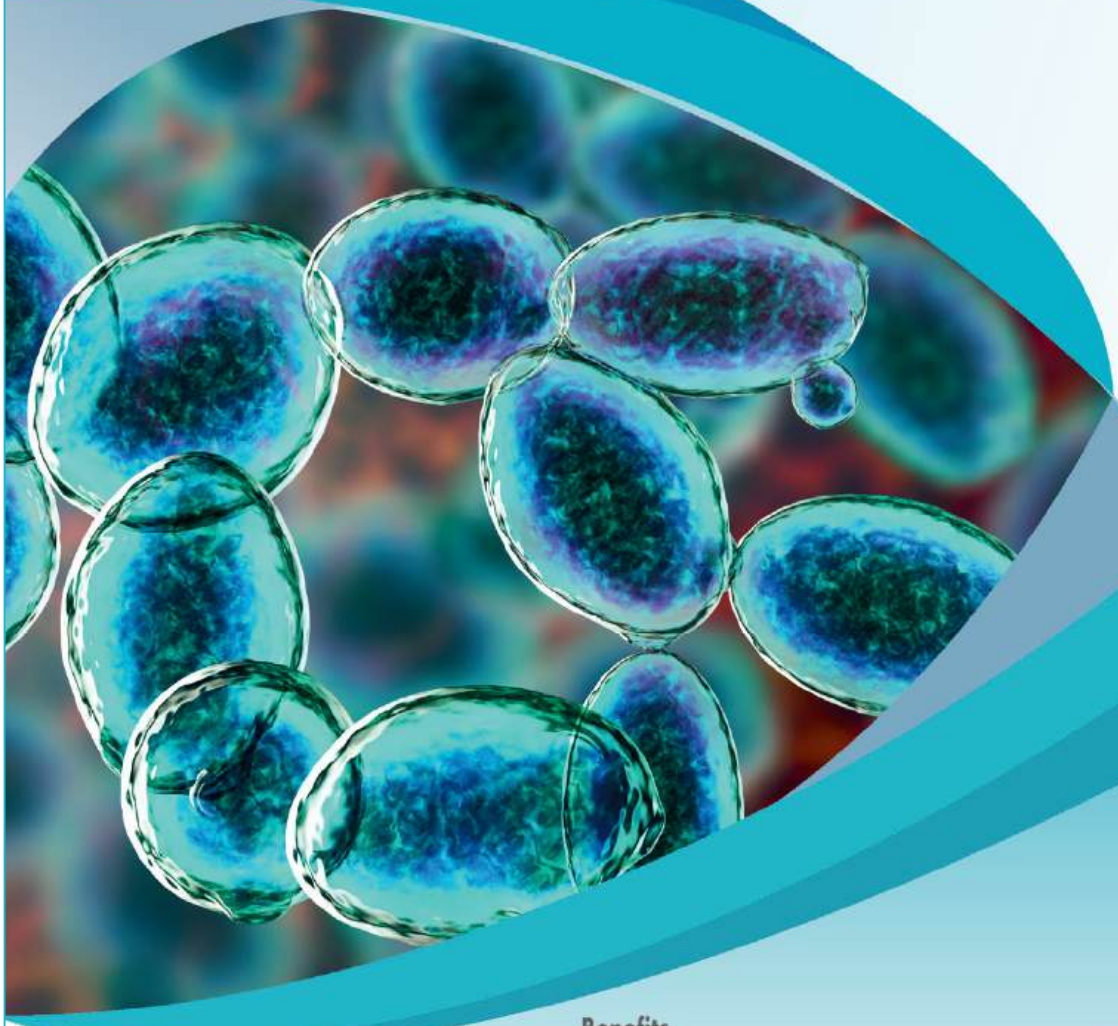
Although there are enormous opportunities, the poultry industry still has many challenges associated with it. Running a sustainable farm is one of the biggest challenges in the poultry industry. However, young entrepreneurs are now trying to solve this issue by recycling waste, setting up solar-powered farms, and using water conservation measures. To minimise the occurrence of outbreaks, innovators are focusing on creating advanced vaccines, biosecurity guidelines, and live health tracking systems for early detection. To tackle price volatility, many startups are following D2C models to connect directly with buyers and make long-term contracts with institutional buyers.

The Indian poultry industry is transforming into a strong, technology-oriented sector with international competitiveness. The combination of untapped market opportunities, friendly regulatory conditions, and scope for innovation makes livestock farming– poultry farming, in particular– very promising for young entrepreneurs. Young people with vision and drive to respond to market needs will lead the transformation and improvement of the agricultural and economic setting in India in years to come.

ZEUS BIOTECH

ZMOS™

Natural Yeast Cell Wall Fractions



Benefits

- Activates Gut Associated Lymphoid Tissue & improves immunity.
- Improves functional and morphological health of gut.
- Improves digestion through stimulating digestive enzyme secretion.
- Reduces pathogen load by binding and exclusion.

For any enquires please mail to : info@zeusbiotech.com

www.zeusbiotech.com

Bird Flu:
Shun Ignorance Embrace Intelligence

SHRIDHAR speaks

Tarun Shridhar
Director General,
Indian Chamber of
Food and Agriculture (ICFA);
and former Secretary,
Ministry of Fisheries, Animal
Husbandry and Dairying,
Government of India

"Science is a beautiful gift to humanity; we should not distort it", Dr APJ Abdul Kalam. It is precisely this distortion that is worryingly visible each time cases of bird flu are detected.

"Chicken prices in Telangana drop by Rs 50 per kg amid bird flu concerns... The recent avian flu scare in Andhra Pradesh has significantly impacted poultry consumption in Hyderabad, leading to a sharp decline in chicken sales. Despite reassurances from the Telangana government that there is no immediate threat, public concern has led to a shift in consumer preferences, affecting poultry industry and farmers in this part of country", record the LinkedIn post of MK Vyas, Secretary Indian Poultry Journalists' Association.

Reports of some stray instances of avian influenza in the states of Andhra Pradesh, Telangana, Maharashtra and Karnataka have once again exposed our propensity to create panic driven by gross ignorance; voices of rationale and sanity are getting drowned while myths, misgivings and at times downright falsehoods are dominating public discourse.

The advisories by the governments of the states assuring all about the safety of poultry products are either muted or not communicative enough to draw sane response or to drown the propaganda seeking to impose bans and restrictions. These include shutting down poultry meat and egg establishments, banning sale and movement of poultry and poultry products, and even advising people to avoid consumption of these products, including eggs.

Poultry sector as a whole and the industry in particular should loudly and widely rebut the myths being perpetuated about the dangers of avian influenza by projecting the correct picture supported by scientifically validated data. After all, at stake is the livelihoods of millions and the economic health of this humongous sector which, not too long ago, had to demonstrate tremendous resilience to stay afloat after the COVID-19 onslaught. The challenge posed by the bird flu myths and misgivings has become quite frequent, yet the true facts and the reality seem to be eluding the public domain.

It was on February the 18th of the year 2006 when multiple episodes of HPAI (Highly Pathogenic Avian Influenza), known by the common moniker of bird flu, were first notified across the country. The fear and the resultant over the top response it generated is understandable as it was against the background of lack of experience of such an epidemic. As a result, millions of birds were culled, even where there was no or little evidence of the spread of the virus. Poultry and its products came to be termed unsafe for humans and the sector was given a bad name. Fortunately, both the policy makers and the industry worked in tandem and soon the poultry bounced back. Since then, incidents have been occurring regularly each year without causing much concern until this year. There is a pattern. HPAI generally emerges in the winter months coinciding with the arrival of migratory birds from Europe and Central Asia. The source of the disease causing Influenza Type A viruses generally is these wild birds. The real risk is the mutation of these viruses into newer strains with increased pathogenicity, but there is little evidence to suggest an emergent risk. Influenza are known for recombination leading to production of different new types through genetic assortment. But how to explain these complex biological phenomena to the common man? What we need to collectively do is to dispel numerous myths touted as reality floating around; in an idiom which is simple and open to effective communication.

India has a robust action plan for control of avian influenza and after the initial setback of 2006, the containment measures have been strong and effective. The poultry farms too have effective biosecurity measures in place, so the spread of disease in bulk of our poultry is highly unlikely. In fact, by stamping out the infected areas, we have successfully created avian influenza free zones to protect the industry and ensure consumer safety. The incidents have been isolated; there has been no epidemic. And there is nothing unusual or dramatic about the present wave; it has been confined for short periods of time in only a handful of states. Further, it has primarily covered wild migratory birds, crows and ducks; only a scattering of poultry birds, certainly not compact or contiguous areas in its ambit.

The first myth causing maximum scare is the infection to humans and thus a risk to human health and life. The fact is that after the infamous and debilitating Spanish flu of 1918, no major influenza pandemics have been reported in humans anywhere in the world. As the name itself suggests, avian influenza or bird flu, is a disease of birds not humans. There are negligible chances of transmission of this virus into humans. The only vulnerable section of

people is those who handle and thus are in close proximity of infected birds over long periods of time. The data published by the World Health Organisation (WHO) is an eye opener. In the seventeen year period between 2003 to 2024 there have been only 963 "confirmed human cases" of avian influenza all over the globe, and this disease has been attributed as the cause of 465 deaths in the world during this period. Not a single confirmed human case of either infection of bird flu or death has been reported in India till now. This fact effectively establishes how illogical and absurd our reaction tends to be.

We Indians habitually eat well cooked food which makes poultry and poultry products "perfectly" safe. It is a long established scientific fact that heat kills the virus as it cannot survive at 70°Celsius. Further, there is no evidence that handling raw or undercooked poultry could possibly transmit the virus. Most strains of avian influenza virus are found in the respiratory and gastrointestinal tracts of the bird, and not in meat. The HPAI virus does on occasions spread to other parts, but then cooking meat kills it. There has been no evidence anywhere in the world that avian influenza virus infection was caused to humans through poultry products. Hand washing and keeping food safe from contamination are precautions which should be inevitably taken in the normal course to maintain good hygiene. Are these facts too difficult to communicate?

Even free range birds and backyard poultry would be at little risk if some simple measures are adopted, like regulating their movements and staying in confined areas offering minimal interaction with wild birds.

Food Safety and Standards Authority of India (FSSAI) had brought out a note of guidance titled "Safe handling, processing & consumption of poultry meat and eggs during bird flu outbreak." This contains a set of precautions to be taken at retail meat shops, by the consumers, during handling and cooking of poultry meat, and during handling and cooking of eggs. It also lists out certain Do's and Don'ts of basic food and cooking hygiene. The message printed out in this small publication is loud and clear, "Properly prepared and cooked poultry meat and eggs are safe to eat." It is this message the poultry industry needs to spread far and wide, repeatedly or else ignorance induced fear would continue to dominate over fact and science based perspective.

Heed the advice of Johann Wolfgang von Goethe, German poet, statesman and scientist, "There is nothing more frightful than ignorance in action."

> Avian influenza or bird flu, is a disease of birds not humans. There are negligible chances of transmission of this virus into humans. The only vulnerable section of people is those who handle and thus are in close proximity of infected birds over long periods of time


IF GUT HEALTH IS YOUR CONCERN!
ADD 3 MORE FEATHERS TO YOUR BIRD
INTEGRITY
PROTECTION
BALANCE
CosBac™
Total Gut Health Solution
Multi-Species | Prebiotic Mix
+91 20 2729 1020 / 21
info@abtl.in
www.abtlenzymes.com
ABTL

Avitech

Knowledge | Nutrition | Innovation

Heat Stress ↓
Performance ↑

Avilyte®

Electrolyte Supplement

- Zero ionic balance for optimum DEB and pH
- Monovalent ions for quicker replenishment
- Low osmolarity (<250 mOsm) for faster absorption

Avilyte FS® | Feed Supplement

- Controlled electrolyte supplementation in contract growing/ integrated operations
- Thermostable through pelleting process

Avilyte WS® | Water Soluble Supplement

- Quick replenishment of ions and energy through water
- Can be administered at farm level

Avitech Nutrition | info@avitechnutrition.com | www.avitechnutrition.com

Article

Biosecurity Essentials for Feed Mills

Dr. Rajesh Reddy
Product Manager
Glamac International Pvt. Ltd.

Introduction

Biosecurity is a strategic approach encompassing policies and regulatory frameworks to manage risks in food safety, animal and plant health, and environmental safety (FAO 2007). Effective biosecurity in the animal supply chain requires all stakeholders to prevent the introduction or spread of pathogenic agents. Governments in many countries mandate individual responsibility for biosecurity, including restricting movements of animals, plants, soil, and equipment that may carry pathogens.

Feed mill managers must allocate resources to ensure employees follow biosecurity protocols. This guidance helps feed mills implement biosecurity practices into operational procedures, reducing the risk of pathogen spread through feed manufacturing and delivery.

Importance of Feed Mill Hygiene

Feed mill biosecurity protects animals from pathogens introduced via feed and limits their spread among animals and humans. Pathogens, whether causing visible or hidden diseases, reduce productivity and financial viability in animal production.

Steps to Maximise Biosecurity in Feed Mills (Stewart et al., 2019)

Assess Biological Hazard Risks: Identify hazards specific to the feed mill's operations and customers (species-specific risks).

Minimise Hazard Entry: Implement protocols to reduce hazard entry, such as screening suppliers, restricting access, and securing entry points.

Mitigate Risks: Use effective mitigation strategies, including dust collection and chemical treatments, while complying with legal requirements.

Decontaminate the Feed Mill: Develop a decontamination strategy involving physical and chemical cleaning, disinfection, and high-heat treatments, adhering to national regulations.

Transmission of Pathogenic Agents

Pathogenic agents can spread through various routes, including

1. Animals
   - Wild birds
   - Rodents (e.g., rats, mice)
   - Feral animals (e.g., predators)
   - Domestic animals (e.g., livestock, poultry, pets)
   - Insects
   - Products with animal-origin ingredients (e.g., processed meats, meat and bone meal)

2. People
   - Feed mill and farm personnel
   - On-site family members
   - Customers (producers collecting, transporting, and using feed)
   - Truck drivers
   - Contractors, maintenance, and service personnel
   - Visitors and neighbours

3. Vehicles and Equipment
   - Utilities, front-end loaders, trucks
   - Veterinary equipment
   - Spray packs and tools

4. Air:
   - Aerosols (e.g., dust, bacteria, viruses, moulds)

5. Feed and Water Supply:
   - Faeces from birds or pest animals
   - Raw materials (e.g., prohibited or contaminated materials)
   - Post-production contamination during transport or storage
   - Poor-quality ingredients or damaged feed (bacteria, mold)
   - Pollutants and infectious microorganisms

Good Manufacturing Practices (GMP) and Feed Safety

The practices outlined in this manual align with the FAO/IFIF Good Practices for the Feed Sector (2020) and may already be part of existing feed safety programs. However, management practices vary by site, making a site-specific risk assessment crucial to identify and address biosecurity risks effectively.

Key Factors to Consider in Risk Assessment

- **Operation Size:** Scale and complexity of the feed mill
- **Location and Layout:** Property and mill setup, including proximity to animal production sites and wildlife presence
- **Cleaning Tools:** Availability and usage of cleaning implements.
- Water Supply: Sources and quality of water used

- **Feed Ingredients:** Origin of feed components and additives (domestic and international)
- **Intended Species:** The animals for which the compound feed is produced
- **Regional Pathogen Status:** Pathogenic agent prevalence in the feed mill's region and sourcing areas
- **Customer and Supplier Interactions:** Activities such as pickups, deliveries, and contractor visits
- **Customer Requirements:** Specific biosecurity needs of customers

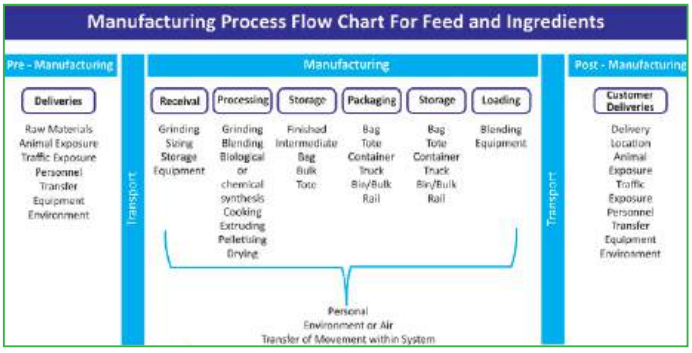


Figure 1 Points of exposure for a feed mil (AFIA, 2019)

- **Operational Considerations:** Other site-specific management factors.

Levels of Biosecurity

Routine biosecurity procedures:

Implementing and adhering to daily biosecurity procedures is essential to:

I. Prevent the introduction of pathogenic agents and pests into the feed mill
II. Minimise the risk of pathogen transmission between production runs

These procedures represent the minimum industry standards and provide a high level of assurance for maintaining feed mill biosecurity

Action plan for Suspected or Detected Pathogens

Each feed mill owner/manager should establish a documented Action Plan to address suspected or detected pathogenic agents. The plan should include:

I. Clear Reporting Guidelines: Define when to report unusual products, contaminants, or pathogenic agents (e.g., Salmonella in feed inputs) and clinical signs of disease in target animals
II. Notification Protocol: Specify who to inform, including relevant authorities, in case of a suspected emergency animal disease event
III. Movement Restrictions: Cease movements on and off the feed mill and property where feasible
IV. Special Precautions: Implement additional biosecurity measures to contain the risk

High Risk Biosecurity Procedures

Biosecurity procedures are typically implemented under the guidance of relevant government authorities. To enhance biosecurity, the following measures should be adopted:

I. Deliver to infected farms last: Schedule deliveries strategically to reduce cross-contamination risks
II. Vehicle wash facilities: Use wash-down facilities before and after entering farms, if available
III. Additional PPE: Wear appropriate biosecurity personal protective equipment (PPE) for added protection

In case of an emergency, promptly communicate the nature and extent of the situation to the relevant authority to minimise risks and potential public health impacts

Routine Biosecurity Procedures

Manage Inputs

The most effective component of a feed mill biosecurity plan is the prevention of entry of hazards

Potable Water

Objective: Maintain water quality to minimise feed and equipment contamination.

1. **Use potable water** – Ensure water meets WHO standards, free from physical, chemical, and biological contaminants
2. **Consult experts** – Seek expert advice if water testing shows poor quality
3. **Regular monitoring** – Test and monitor water treatment systems for effectiveness
4. **Closed system** – Maintain a closed system for treated water from treatment to use

Purchase of Feed Inputs

Objective: Manage the introduction and movement of feed ingredients to minimise the risk of pathogenic agents and pests.

1. Supplier Approval Program:
- Set specific requirements for purchased ingredients
- Verify supplier protocols and conduct facility reviews if necessary
- Communicate safety expectations to suppliers

2. Preferred Suppliers:
- Purchase from approved suppliers with quality assurance and biosecurity programs

3. Ingredient Sourcing:
- Ensure suppliers meet the feed mill's biosecurity and feed safety standards

4. Compliance with Legislation:
- Verify feed commodities comply with national regulations on chemical residues and contaminants

5. Risk Assessment for Products:
- Consider the following:
  - Origin of the product
  - Presence of pests or pathogens in the source region
  - Production methods used (e.g., mechanical vs. household)
  - Type of packaging (clean/new vs. recycled)
  - Previous truck loads for bulk products
  - Biosecurity protocols of third-party transporters
  - Time since product manufacture

Receival of Feed Ingredients

Objective: Minimise the risk of feed contamination during the receival of ingredients.

1. Vehicle Cleanliness Declaration
- Require signed declarations regarding cleanliness and previous load identity
- Avoid vehicles that previously carried contaminants like chicken litter or animal-based fertilizers.

2. Vehicle Cleaning
- Ensure vehicles are free from mud, dust, dirt, and manure before entry
- Deny entry to vehicles posing contamination risks

3. Visual Checks
- Conduct on-site visual checks based on company risk ratings

4. Feed Spill Management
- Clean up spills promptly to avoid pest attraction

5. Unloading Procedures
- Use methods like funnels and socks to minimise contamination during unloading

6. **Ingredient Inspection**
   - o Inspect all feed ingredients upon receival for contaminants
7. **Risk-Based Monitoring**
   - o Establish a monitoring program for high-risk feed ingredients, particularly for pathogens like Salmonella
8. **Packaging Standards**
   - o Reject products in reused bags from high-risk regions.
9. **Traceability**
   - o Maintain receival records (e.g., date, lot number) for traceability and response in case of contamination or product recall

Manage the Movement of Personnel

Objective: Minimise the risk of contamination due to personnel actions and hygiene practices.

1. **Clean Clothing**
   - o Personnel should wear clean, laundered clothes each day, free from animal contact
   - o Change clothes after decontaminating machinery and equipment
2. **Protective Clothing**
   - o Do not take protective clothing and footwear outside the feed mill unless they are cleaned first
   - o Wear protective clothing only within the feed mill to prevent contamination
3. **Work Area Awareness**
   - o Personnel should avoid areas with high contamination risk.
   - o Employees handling raw materials should not handle finished products to prevent cross-contamination
4. **Hand Hygiene**
   - o Wash and disinfect hands upon entering and leaving the feed mill to reduce the spread of pathogens
5. **Designated Eating Areas**
   - o Eat only in designated areas to avoid contaminating feed and attracting pests

Manage the Movement of Visitors, Contractors, Suppliers and Other Service Personnel

Objective: Prevent the introduction and transmission of contaminants by external personnel.

1. **Visitor Compliance**
   - o Ensure visitors follow biosecurity practices to minimise the risk of introducing pathogens
2. **Access Control**
   - o Limit access to the feed mill area for visitors and suppliers. Use signage to clearly communicate biosecurity procedures and risks
3. **Designated Meeting Area**
   - o Direct visitors to a meeting area away from production, receiving, and loading zones before entering the feed mill
4. **Visitor and Vehicle Register**
   - o Maintain records for all visitors and vehicles, including: Date, time, name, company, contact number, vehicle registration, signature, biosecurity risk assessment, and last contact with farmed animals
5. **Risk Assessment**
   - o Assess visitors, contractors, and auditors for biosecurity risks before granting access to the feed mill
6. **Hygiene Procedures**
   - o Ensure visitors follow the same hygiene procedures as feed mill personnel before entry

Manage the Movement and Use of Equipment

Objective: Prevent contamination through the movement of equipment in and out of the feed mill.

1. **Personal Equipment:**
   Employees and contractors must ensure that personal tools and equipment (e.g., laptops, phones, cameras) are cleaned and free of organic matter before use in the feed mill
2. **Education on Equipment Risk:**
   Educate employees about the risks of using borrowed, hired, or second-hand equipment, particularly the potential for introducing pathogenic agents
3. **Separation of Equipment Use:**
   Ensure that the same equipment is not used for both feed handling and waste management. If it must be, clean and disinfect the equipment thoroughly between uses to prevent cross-contamination
4. **Equipment Risk Assessment:**
   Any equipment entering production areas must be assessed for potential risks. It should be cleaned and disinfected as needed before and after use to ensure that it does not introduce contaminants

Manage the Movement and Use of Vehicles

Objective: Minimise the risk of site contamination due to the movement of vehicles

1. **Employee Education:**
   Educate feed mill employees about the potential risks of pathogenic agents introduced by visiting vehicles and machinery
2. **Limit Vehicle Access:**
   Limit the entry of non-feed mill vehicles, machinery, and equipment beyond designated delivery areas
3. **Designated Parking Area:**
   Establish a designated parking area for vehicles not entering the production area
4. **Visitor Vehicle Parking:**
   Visitors should park outside the production area unless it's essential for the vehicle to enter (e.g., maintenance contractors). Vehicles and machinery entering the feed mill should be directed to specific locations
5. **Vehicle Risk Assessment:**
   Any vehicle entering production areas should undergo a risk assessment, as determined by the production manager
6. **Prohibited Vehicles:**
   Trucks carrying animals, animal products, or contaminated vehicles (e.g., those carrying organic waste) should not be allowed into the feed mill area
7. **Vehicle Wash Area:**
   Consider establishing a designated wash area for disinfection or fumigation of vehicle wheels before entering the parking area

Manage Production Practices

Storage of ingredients

Objective: Minimise contamination risks during storage

1. **Prevent contamination** – Store ingredients away from pests, dust, moisture, and waste
2. **Clean spills quickly** – Leftover feed attracts pests and can lead to hygiene issues
3. **Maintain integrity** – Prevent cross-contamination and follow regulations for restricted products
4. **Label and organise** – Store ingredients according to their intended use and manufacturer guidelines
5. **Keep dry and elevated** – Use pallets to prevent mold and spoilage.
6. **Follow FIFO & FEFO** – Use a "first-in, first-out" or "first-expiry, first-out" system to maintain freshness

Mange Pests and Vermin

Objective: Minimise the risk of introducing infectious and pathogenic agents through pests and vermin in production and storage areas

1. **Implement a control program** – Use secure, tamper-proof bait stations with mapped locations
2. **Monitor regularly** – Check bait stations as per the pest management plan and replace baits as needed
3. **Keep records** – Track inspections, analyze trends, and adjust control measures accordingly
4. **Place baits safely** – Keep them away from feed areas; avoid toxic or high-risk baits like grain or powder.
5. **Use safe methods** – If shooting is necessary, opt for non-toxic ammunition
6. **Secure entry points** – Keep doors, windows, and screens well-fitted and in good repair
7. **Maintain buildings** – Seal holes and drains or use barriers like wire mesh to block pest access

Mange Feral Animals and Wildlife

Objective: Reduce the risk of site and feed contamination by controlling feral animals and wildlife.

1. **Employee awareness** – Train staff on the risks of pests and disease transmission
2. **Control measures** – Use deterrents like bird spikes and physical barriers to prevent access

Site Standards

Objective: Minimise contamination risks from people, pests, raw materials, vehicles, and equipment.

1. **Control access** – Secure entry points to reduce exposure to pests and wildlife
2. **Maintain roadways** – Prevent puddles, mud, and dust buildup
3. **Keep areas clean** – Regularly clean receiving and load-out zones to avoid contamination
4. **Manage traffic flow** – Separate incoming and outgoing vehicle routes
5. **Schedule maintenance wisely** – Conduct between production runs and remove all hardware after
6. **Ensure hygiene** – Follow cleaning schedules, conduct line surveys, and flush equipment regularly
7. **Control vegetation** – Keep grass short to deter rodents and pathogens
8. **Reduce waste risks** – Remove old pallets, cover bins, and clear standing water to prevent pest attraction

Feed Manufacturing Process

Objective: Minimise the risk of contamination throughout the feed production process.

1. **Optimise feed flow** – Ensure a one-way movement to reduce contamination risk; apply mitigation if necessary
2. **Prevent cross-contamination** – Use sequencing, cleaning, dedicated lines, and flushing schedules, with records maintained
3. **Follow cleaning protocols** – Establish schedules for equipment cleaning based on risk, monitoring effectiveness
4. **Apply safety controls** – Follow site protocols for pathogen control, including temperature, contamination-reducing agents, and air quality measures
5. **Adhere to regulations** – Prevent prohibited materials from entering feed and meet labeling requirements
6. **Control dust** – Reduce airborne dust to limit pathogen and pest transmission
7. **Manage grain dust reuse** – Assess and handle screened particles to prevent contamination
8. **Regular equipment cleaning** – Maintain cleanliness inside and out
9. **Monitor safety** – Conduct pathogen and bacteria testing on ingredients, feed, and facility environments

Training, Planning and Recording

Training

Objective: Ensure all feed mill employees are trained in biosecurity protocols.

1. **Comprehensive training** – Train staff annually, during onboarding, and after biosecurity breaches
2. **Early detection** – Educate employees on identifying and responding to contamination risks
3. **Safe chemical handling** – Ensure proper training for disinfectant and herbicide use, with safety data sheets maintained
4. **Inclusive training** – Train all staff, including delivery drivers, and keep records of completed training
5. **Ongoing evaluation** – Regularly assess training effectiveness through supervision and periodic reviews

Planning, Documenting and Record Keeping

Objective: Facilitate early detection of feed contamination and ensure a prompt response to biosecurity breaches.

1. **Maintain site maps** – Keep an updated layout of production areas, sheds, and access points
2. **Keep records** – Follow documentation requirements, meeting regional retention laws
3. **Emergency readiness** – Have a documented Pathogenic Agent Control Action Plan accessible to all staff
4. **Verify product receipts** – Ensure proper documentation before unloading any product
5. **Track processing** – Maintain batch records confirming compliance with treatment procedures
6. **Implement sampling** – Follow specified testing procedures for received products and retain results
7. **Ensure traceability** – Use systems to track ingredients (one step back) and feed movement (one step forward)

Manage Outgoing Products

Scheduling deliveries

Objective: Reduce the spread of pests and pathogenic agents through feed deliveries.

1. **Plan delivery schedules** – Prioritise deliveries based on breeder status, livestock age, and risk profiles (low to high risk).
2. **Maintain a disease log** – Keep track of disease status at livestock production sites to inform delivery decisions
3. **Ensure communication** – Coordinate with feed mills, contractors, and clients about known outbreaks to adjust delivery routes
4. **Adjust routes during outbreaks** – Avoid high-risk areas and change routes to prevent contamination spread, especially when delivering to known infected sites
5. **Follow movement restrictions** – Ensure deliveries comply with government regulations during outbreaks and require approval if necessary

Feed delivery

Objective: Reduce the spread of pests and pathogenic agents through feed deliveries.

1. **Clean attire** – Drivers must wear clean, animal-free work clothing at the start of each day
2. **Follow on-farm biosecurity** – Drivers should adhere to farm protocols, including closing gates and sticking to designated roadways
3. **Avoid production areas** – Drivers should not enter animal production zones like sheds or ranges
4. **Clean up feed spills** – Promptly clean and dispose of feed

spills on-site, using farm equipment, and notify the feed mill
5. **Use wash facilities** – Utilise available wheel wash or vehicle wash down systems before entering the farm.
6. **Follow farm personnel instructions** – Drivers must use required biosecurity PPE, follow washing/disinfection protocols, and comply with on-site restrictions.
7. **Quarantine returned feed** – Assess and quarantine any returned feed for potential contamination risks before re-entering the mill.

Delivery Truck

Objective: Minimise the spread of pests and pathogens due to feed deliveries.

1. **Coordinate with contractors** – Ensure freight contractors are aware of and follow biosecurity requirements for feed deliveries
2. **Regular cleaning** – Delivery vehicles must be cleaned or disinfected as per a defined schedule, with records maintained
3. **Truck cabin hygiene** – Keep cabins clean, free from waste, and disinfect high-contact surfaces like steering wheels and pedals
4. **Use approved wash facilities** – Trucks should use designated wash down facilities before returning to the feed mill, where applicable

Storage of Finished Products

Objective: Minimise the risk of contamination of finished feed products during storage before delivery.

1. **Proper storage** – Store feed in ways that prevent contamination by animals, pests, and other feed types
2. **Clean feed spills** – Clean up spills immediately to avoid attracting pests and vermin
3. **Maintain product integrity** – Implement procedures to avoid cross-contamination and follow regulations for restricted products
4. **Clear labeling** – Label feed correctly by type, species, and storage instructions
5. **Store off the ground** – Keep feed raised to prevent mold growth and contact with the ground
6. **Use FIFO** – Apply a first-in-first-out system to ensure feed is used within its designated time frame

Waste Management

Objective: Minimise the spread of pests and pathogens due to improper waste disposal.

1. **Proper waste disposal** – Ensure waste is disposed of in ways that prevent contamination of feed, ingredients, or equipment
2. **Regular waste collection** – Collect waste regularly to prevent accumulation in processing and handling areas
3. **Segregate and label waste** – Store waste in clearly identified, closed bins to prevent accidental use, and differentiate waste by risk profile
4. **Designated containers** – Use containers strictly for waste and never for feed or ingredients

Premise Design and Facilities for New Mills

Location

Objective: Choose a mill location that minimises the risk of contamination.

1. **Consider contamination risks** – Evaluate potential environmental contamination sources and the effectiveness of protective measures when selecting a location
2. **Avoid high-risk areas** – Feed mills should be located away from polluted environments, industrial activities, flood-prone areas, pest infestations, and places with poor waste management

Design and layout

Objective: Design a feed mill that ensures discrete operations while maintaining high biosecurity levels

1. **Separate operations** – Ensure physical separation of activities that could cause contamination
2. **Separate areas** – Keep receiving, storage, and shipping areas separate from processing areas to reduce contamination risk
3. Protect feed and ingredients – Ensure buildings and facilities protect feed from potential hazards
4. **Adequate space** – Design the layout to allow for sufficient operational space and safe storage of materials and equipment
5. **Easy access for cleaning** – Ensure buildings and equipment are designed for easy access and cleaning
6. **Pest deterrence** – Build facilities to prevent pest access, with no unprotected openings, properly located air intakes, and sealed roofs, walls, and foundations

Internal Structures and Fittings

Objective: Build a mill that facilitates easy cleaning.

1. **Easy-to-clean materials** – Use materials for internal structures (e.g., walls, doors, partitions) that are easy to clean and prevent buildup
2. **Proper floor design** – Ensure floors are designed to allow adequate drainage following spills

Equipment

Objective: Ensure all equipment is designed for easy cleaning.

1. **Easy-to-clean materials** – Use materials for equipment that can be easily disassembled, cleaned, and maintained to prevent feed contamination, cross-contamination, and carryover

Hygiene Facilities

Objective: Ensure there are adequate facilities to maintain hygienic operations for the people running the mill.

1. **Hygiene Facilities:**
   - o Provide adequate hygiene facilities, including means for washing and drying hands, to maintain personal hygiene and avoid feed contamination
2. **Potable Water and Soap Availability:**
   - o Ensure a constant supply of potable water and availability of soap at designated delivery points for handwashing

Conclusion

In conclusion, effective biosecurity procedures in feed mill operations are crucial for minimising contamination risks and ensuring product safety. By implementing strict protocols for inputs, personnel, visitors, equipment, and waste management, alongside regular training and compliance with regulations, the risk of pathogens and contaminants is reduced. This proactive approach safeguards the integrity of the feed production process, ensuring hygiene and contamination prevention throughout.

IPR Knowledge Review, Patna Explores Advancements in Poultry Nutrition and Feed Technology

The third seminar in the IPR Knowledge Review 2024-25 series was organised in Patna, 22nd February on the theme "Advancements in Poultry Nutrition and Feed Technology." Graced by the presence of Dr. N. Vijay Lakshmi, Additional Chief Secretary, Animal and Fisheries Resources Department, Government of Bihar and Dr. Inderjeet Singh, Vice Chancellor, Bihar Animal Sciences University, Patna, the seminar served as a dynamic platform for knowledge sharing amongst the attending feed millers, layer farmers, breeders and broiler farmers.

Speakers at IPR Knowledge Review, Patna included:

- Dr. Abhijit Mishra, Poultry Consultant, Specialist in Animal Nutrition
- Dr. Vijay Sharma, AGM-Technical, Venky's India Ltd.
- Dr. Debakanta Biswal, General Manager – Nutrition, Noveltech Feeds Pvt. Ltd.
- Dr. Bharat Lotan Sadarao, Senior Technical Manager, Kemin Industries South Asia Pvt. Ltd.
- Dr. Shreeram Oak, Head – South Asia, Bruker India Scientific Pvt. Ltd.
- Mr. Ricky Thaper, Joint Secretary, Poultry Federation of India
- Dr. Pawan Kumar, President, Bihar Poultry Farmers Association

The seminar provided attendees with actionable strategies to enhance productivity while ensuring sustainability.

IPR Knowledge Review

Hostazym® X

The preferred NSP enzyme

AUTHENTIC EUROPEAN SOURCE

ensures consistency

whatever feedstuff you use...

Huvepharma N.V.
Uitbreidingstraat 80 • 2600 Antwerp • Belgium
P +32 3 288 1849 • F +32 3 289 7845
customerservice@huvepharma.com

HUVEPHARMA
www.huvepharma.com

Huvepharma SEA (Pune) Pvt. Ltd.
42, 'Haridwar', Road 2 A/B
Kalyani Nagar, Pune 411006, India
P +91 20 2665 4193 F +91 20 2665 5973
salesindia@huvepharma.com

Kemin IH Impressions at Kolkata

Kemin Industries South Asia recently hosted their IH Impressions symposium in Kolkata, bringing together experts, industry leaders, and stakeholders to discuss advancements in animal intestinal health. The symposium underscored the critical role of gut health in enhancing poultry productivity and sustainability.

The expert speakers who shared their insights were:

- Dr. Jayaraman Krishnarajan, Consultant Poultry Veterinarian
- Dr. Satyam Sharma, Product Manager, Intestinal Health, Kemin Industries South Asia
- Dr. Sushant Labh, National Techno Commercial Manager, Kemin Industries South Asia

As the global population grows, ensuring food security remains a pressing challenge. Today, it is no longer just about producing enough food—it is about delivering nutrient-rich, high-quality protein, crafted with care and efficiency. However, this journey is not without its challenges. The poultry sector continues to navigate shifting market dynamics, unpredictable input costs, and fluctuating output prices. To maintain profitability, production systems have evolved to become more resilient—adapting to raw material changes, disease threats, and environmental fluctuations. One of the most critical aspects of this evolution is intestinal health, which plays a fundamental role in nutrient absorption and efficient protein conversion. Recognising gut health as a cornerstone of sustainable poultry production, Kemin has created innovative solutions to enhance intestinal health management and the symposium showcased some of them including a demonstration of Customer Lab Services.

Randhir Thakur and Gautam Kumar delivered the welcome address and vote of thanks respectively.

11th Kolkata International Poultry Fair 2025– The Poultry Industry's Biggest Event in Eastern India

The 11th Kolkata International Poultry Fair 2025 (KIPF 2025), a significant event in India's poultry industry calendar, successfully concluded on 14th February. Organised by the West Bengal Poultry Federation in collaboration with the Animal Resources Development Department, Government of West Bengal, the expo spanned four days from 11th to 14th February at the swank Biswa Bangla Exhibition Centre in New Town, Kolkata.

The 4-day expo commenced with "NOVACON," a full-day international seminar on 11th February at the Biswa Bangla Convention Centre. This seminar focused on innovation in the poultry sector and featured interactive sessions with speakers of national and international repute. In his introductory address, Shri Vivek Kumar, IAS, Additional Chief Secretary, ARD Department, Government of West Bengal, spoke about recent developments in the poultry sector of West Bengal. He highlighted how the poultry sector was growing and contributing significantly to augmenting rural livelihoods. He also spoke about how the Government of West Bengal had invested heavily in the sector and is acting as a facilitator for the development of the sector.

The speakers at NOVACON 2025 were:

Dr. Tiago Tedeschi Dos Santos, Innovation Director, AB Vista
Mr. M. Prakashbabu, Chief Geneticist, Venkateshwara Breeding & Research Farm
Dr. Stephane Lemiere, Head of Global Technical Service, Boehringer Ingelheim
Dr. Sudipto Haldar, Research Director, Agrivet Research & Advisory
Dr. Phang Yuen Fun, Poultry Business Director, MSD APSA Region
Prof. (Dr.) Ganapati D. Yadav (Padmashree), National Science Chair, SERB, Government of India; Emeritus Professor of Eminence ICT Mumbai
Mr. Onkar Singh Batra, Poultry Entrepreneur
Ms. Laura Macció, Co-founder & CEO, metaBIX Biotech
Dr. Shivaji Dey on behalf of Mr. Sameer Agarwal, Managing Director, Shalimar Group of Companies

NOVACON saw the participation of over 800 delegates who included poultry farmers, entrepreneurs, veterinarians, academicians, scientists, and government officials, all eager to discuss the latest developments and future opportunities in the sector.

The Inauguration ceremony of KIPF 2025 happened from the stage of NOVACON. The Chief Guest of the ceremony was Shri Pradeep Kumar Majumdar, Minister-in-Charge, Panchayat and Rural Development Department, Government of West Bengal. Other dignitaries who attended the inauguration were Shri Swapan Debnath, Minister-in-Charge, Animal Resources Development Department, Government of West Bengal, Dr. Anirban Guha, Assistant Secretary, DAHD; Dr. Jimlee Sarmah, Deputy Commissioner, AQCS, Kolkata; Dr. Utpal Kumar Karmakar, Managing Director, West Bengal Livestock Development Corporation Ltd.; Dr. Tirtha Kumar Datta, Vice Chancellor, WBUAFS; Dr. Nilotpal Ghosh, Dean, Faculty of Veterinary & Animal Sciences, Dr. Partha Das, Registrar, WBUAFS; and Shri Benoy Sikdar, WBCS (Exe), Special Secretary, ARD among others.

The expo which began on 12th February saw a total footfall of 25,000 visitors over three days. 146 companies put up booths at the expo. A stand out feature of the expo was the Student Zone which saw the participation of 27 colleges from across the country. Over 1300 students visited the expo.

KIPF 2025 also hosted two important meetings – Pan India Broiler Coordination Committee Meeting presided over by Mr. Vasanthkumar Setty, President & Eastern India Poultry Development Forum Meeting.

The next NOVACON will be organised on 10th February 2026 and 12th Kolkata International Poultry Fair 2026 will be held from 11th to 13th February 2026.









trouw nutrition

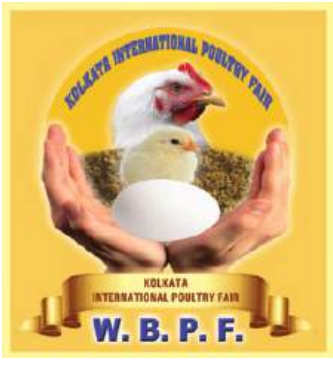

NOVETECH


OPTIMA


NUQO
NUQO
CONVERTING SCIENCE into INNOVATIVE SOLUTIONS


ZEUS
BIOTECH
ZEUS
BIOTECH


NOVUS
NOVUS


KOLKATA INTERNATIONAL POULTRY FAIR
KOLKATA
INTERNATIONAL POULTRY FAIR
W. B. P. F.


JAPFA
www.japfaindia.com


ZenexZ
ZenexZ


VIJAY RAJ
+91 8125 169690
VIJAY RAJ


DHL


aSQVET


KEMIN

BOOSTUP

ROSSARI
making you more competitive

Optimizing Growth & Metabolic Efficiency

Boostup is a unique blend of highly bioavailable amino acids, vitamins, micro and macro minerals that are absorbed in the gastrointestinal tract and are utilized for growth, immune function, energy production and maintaining overall health and productivity of the flock.

Improved Feed Conversion Ratio (FCR)
Maximizes nutrient absorption, reducing feed costs

Faster Growth & Weight Gain
Ensures quicker market readiness

Enhanced Egg Production & Shell Quality
More eggs per hen with stronger shells

Stronger Immunity & Disease Resistance
Reduces mortality, boosting farm profits

Optimal Bone & Muscle Development
Ensures healthier, more productive poultry

Nutritional Highlights:

Amino Acids
Enhance growth, muscle formation, and feed efficiency

Vitamins
Boost egg production, metabolism, and immunity

Minerals
Strengthen bones, improve eggshell quality, and support hydration

Boostup Boosts overall health and productivity

Scientifically Formulated

Balanced Nutritional Support

Inclusion level:

Broilers/Layers/Breeders:
1 ml per liter of drinking water

ROSSARI BIOTECH LIMITED
(An ISO 9001:2015 & 14001:2015 & GMP Certified Company)
Rossari House, Golden Oak, LBS Marg, Surya Nagar, Opp. Mahindra Showroom, Vikhroli (West), Mumbai - 400079, Maharashtra, India.
+91 22 6123 3800 info@rossari.com www.rossari.com

Tech Meet on Nutritional Modulation for Better Immunity

Andrés Pintaluba S.A. (APSA), Spain, and Bhuvana NutriBio Sciences, India, hosted a Tech Meet for layer farmers on 29th January at Rajahmundry, Andhra Pradesh. The event, attended by over 50 prominent layer farmers, veterinary nutritionists, and consultants from Godavari district, focused on "Nutritional Modulation for Better Immunity."

The session began with a warm welcome by Dr. Nikhil Adagale, General Manager, Bhuvana NutriBio Sciences, followed by a keynote address from Dr. Manoj Sarma, Director, Bhuvana NutriBio Sciences. The lead speaker, Dr. S.V. Rama Rao, a senior scientist and renowned researcher, provided insightful information on the role of nutrition in strengthening bird immunity, the use of feed additives, and strategies to combat disease challenges.

Dr. Rama Rao was felicitated by Dr. Jyoti Kumar Mainali, Area Manager – Asia, APSA, and Dr. Santosh Ire, Director, Bhuvana NutriBio Sciences. His session covered key aspects of immune response, immunity fundamentals, and nutritional strategies to mitigate heat stress.

Following this, Dr. Sarma spoke on "Mitigation of Current Infection Challenges through Biosecurity," highlighting contamination sources and preventive measures, a crucial topic in the current poultry landscape.

Ibrahim Shaikh, Business Manager, Andhra Pradesh, concluded with a vote of thanks, acknowledging the attendees' participation.

Hitech's

Creating Values

Poultry of the Highest Quality!

HITECH HATCH FRESH PRIVATE LIMITED

Metropolitan Co-Operative Housing Society Ltd., Sector - B, Plot No. - 28, Canal South Road, Kolkata - 700 105
Ph. : 91-33-40638301 | Fax : 91-33-40638315 | E-mail : hitechhatchfresh@rediffmail.com | Website : www.hitechhatchfresh.com

Integration Office :

BHALUKA • NATAGARH • KATWA – 9734148253 | BASIRHAT – 03217 263744 | BADURIA – 033217 238444
BURDWAN • BHATAR • SURI • SALAR • PLASSEY • BANKURA – 8582891213 | BHADRESHWAR (HOOGHLY) • MALDA • BARUIPUR – 2633 6973, 9903614062

IPPE 2025 Showcases Innovation, Sustainability, and Global Poultry Industry Growth

The International Production & Processing Expo (IPPE) 2025, held in Atlanta, USA, reaffirmed its status as the world's largest annual poultry, meat, and animal food industry event. Hosting over 1,300 exhibitors across nearly 600,000 square feet, the expo attracted participants from 130+ countries, showcasing cutting-edge innovations in poultry processing, automation, feed solutions, and animal health. The event featured 80+ learning sessions on key topics like sustainability, artificial intelligence, and industry advancements.

The U.S. Soybean Export Council (USSEC) highlighted U.S. soy's critical role in global animal nutrition, emphasising sustainable soy-based solutions for livestock. Through strategic collaborations, USSEC showcased industry advancements and its Soy Excellence Center's certification programs.

Indian manufacturers also made a strong impact. Companies like Gartech Equipments and Dhumal Industries exhibited advanced, cost-effective poultry solutions, solidifying India's reputation in the global market. Indian pharmaceutical firms specialising in herbal and enzyme-based feed additives, including Nurture Technology and Lumis Biotech, also gained recognition for sustainable animal health innovations.

Technical presentations explored AI applications in poultry data, enhancing industry efficiency. With overwhelming positive feedback, IPPE continues to drive technological progress and global partnerships, setting the stage for its next edition in 2026.

GLOCREST®
Pharmaceutical Pvt. Ltd

Innovation for a Better Health

CALCITRIOL-D™

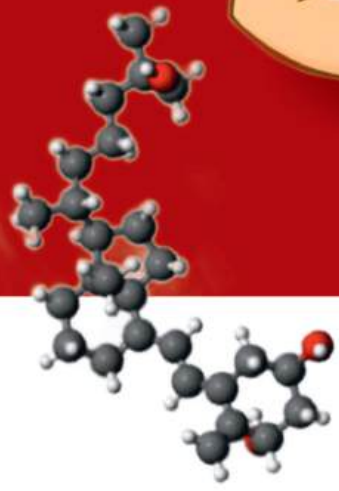
Active & Original Vitamin D3 from European Source

imported from NETHERLANDS

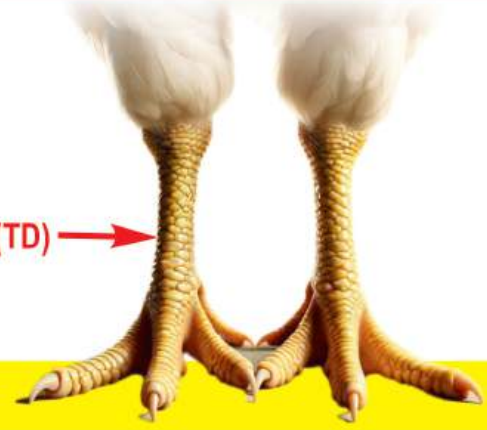
Strong Skeleton and **Strong Egg Shell**

Premix Form

Concentrate Form



- Reduces incidences of **Tibial Dyschondroplasia (TD)**



CALCITRIOL-D™ - The Nutritional Revolution

TM - Trademark ® - Registered Trademark

GLOCREST Pharmaceutical Pvt. Ltd.

Off.: 2018, Solus Hiranandani Business Park, Hiranandani Estate, Thane (W) - 400 607. Maharashtra. India.

www. glocrestpharma.com +91 22-46007565 info@glocrestpharma.com

ISO CERTIFIED COMPANY cGMP COMPLIANT FDA

Launch

LPAI Vaccine Introduced in India

Infections of low pathogenic avian influenza virus (H9N2 subtype) cause huge economic losses to the poultry farmers/ industry in India due to reduced egg production (up to 50%), respiratory illness and mortality. In India, infections with H9N2 virus in poultry have been reported since 2003 and is widely prevalent and endemic. However, no vaccine was available so far against the circulating H9N2 viruses in India which belong to G1-W lineage. Although commercial vaccines are available abroad, antigenic divergence between the vaccine strain and the currently circulating field strains in India may result in poor antigenic coverage leading to the vaccine failure. As protection provided by imported vaccine against the strains circulating in India is uncertain, there is a pressing need of an indigenously developed vaccine which can provide protection against the circulating H9N2 virus strains in India. This was followed by the Government of India's new vaccine policy in August 2022. Based on the consultations with the experts and requests from the stakeholders, the Department of Animal Husbandry and Dairying agreed to the policy for vaccination against LPAI (H9N2) in India.

The National Institute of High Security Animal Diseases (ICAR-NIHSAD) in Bhopal, India developed the first indigenous vaccine for the H9N2 avian influenza virus in chickens. The vaccine is intended to prevent and control the spread of H9N2 in chicken. The vaccine protects against all antigenically divergent strains of H9N2 low pathogenic avian influenza virus in India. The vaccine can help reduce economic losses for poultry farmers and the poultry industry to increase the income of poultry farmers.

According to the policy, technology transfer of "Inactivated low pathogenic avian influenza (H9N2) vaccine for chickens" developed by ICAR-NIHSAD, Bhopal happened to Venkateshwara Hatcheries Pvt. Ltd., Pune, facilitated by Agrinnovate India Ltd. (AgIn) at NASC, New Delhi. As part of technology transfer, hands on training on "Low Pathogenic Avian influenza (H9N2) Vaccine Inactivated" was organised for Ventri's production team at NIHSAD, Bhopal, India.

Ventri Biologicals built a first-of-its-kind Biosafety level-3 (BSL-3) vaccine production facility for poultry industry in India, dedicated to LPAI vaccine production with process automation with semi-auto chick embryo inoculator, automated allantoic fluid harvest machines, closed containers inactivation and product formulation followed by auto product filling and labelling stations.

Ventri Biologicals has branded the product, "VENGEM". They are also coming up over with series of products including the concentrated form and the combination with other viral vaccines.

Launch events were organised at multiple locations including Hyderabad, Siddupet, Karimnagar, Nashik, Pune, Ssangli, Amravati, Gorakpur, Kanpur, and Lucknow. Key roles were played at the seminars by K G. Anand, Dr. N. Baburaj, Dr. Prakash Reddy, Dr. Sanjay Gavkare, Dr. Suneel Sharma, Deepak Khosla, Dr. M.M. Chawak, Dr. Namdeo Bulbule, Dr. H. G. Murade, H.S. Padde, Dr. Shashikant Shiwarkar, Dr. Jaypal Kumar Singh, Sashibhushan and Chittaranjan Sahoo.

Introducing

Venworld
THE BEST IN ANIMAL HEALTHCARE

VENGEM™

(Low Pathogenic Avian Influenza (H9N2) Vaccine, Inactivated)

"Most valuable Gemstones to bestow lives of Poultry
with a pinch of little more shades"

VENGEM 9

VENGEM C 9

VENGEM SUPER 9

VENTRI BIOLOGICALS

(Vaccine Division of VHPL)

'Venkateshwara House', S. No. 114/A/2, Pune Sinhagad Road, Pune 411030. **Tel.:** +91 (020) 24251803, **Fax:** +91-20-24251060 / 24251077.

VENTRI

Announcement

Dr. Manish Chaurasia Joins Glamac

Glamac International Pvt. Ltd. recently announced the appointment of Dr. Manish Chaurasia as AGM – Sales & Marketing, Key Accounts.

Dr. Chaurasia has been associated for over 15 years with the veterinary science and animal husbandry sector in various roles spanning marketing, product management, farm management, disease diagnosis, and technical support. He completed his graduation in Veterinary Science and Animal Husbandry from the prestigious Nanaji Deshmukh University of Veterinary Science in Jabalpur, Madhya Pradesh. This was followed by Advanced Management Development Program from the UCD Michael Smurfit Graduate Business School in Dublin, Ireland.

He has worked with some of the leading feed manufacturers and feed additives businesses in India, specialising in monogastric animals. He has had a wide range of responsibilities, from managing marketing strategies to providing technical support. One of the notable milestones in Dr. Chaurasia's career was his tenure at Alltech where he served as Marketing Manager for South Asia.

AYU-C FORTE

Scientifically formulated combination

Make your bird perform better during Heat Stress

• Vit C • Heat Regulators • Energizer • Betaine • Electrolytes
• Probiotics • Immunomodulator • Chromium

Prevents Every Aspect Responsible For Loss Due To Heat Stress

AYUGEN® PHARMA PVT. LTD.
(An ISO 22000:2018 & GMP Certified Company)

Regd. Office: 202, "Aranya", Aamachi Colony,
Behind Venky's Express, Bavdhan Pashan Road,
Pune - 411021. Maharashtra.
Customer Care No. 9730076211/9730076216
E-mail : info@ayugenpharma.com

SEN

Touching Lives

Celebrating 75 Years of Excellence in Poultry Industry

Sen Group, one of Eastern India's oldest and most trusted poultry house, has been a cornerstone of the industry for 75 years. As a pioneering value-driven organization, the Group encompasses poultry farming and Integrator farming, feed manufacturing, and breeder farming with day-old chicks production. Committed to excellence and social empowerment, Sen Group supports local farmers, provides employment, and ensures trust and quality through superior products and ethical practices. By fostering rural development through sustainable farming and community initiatives, Sen Group has been your trusted partner since 1950.

75 SEN SINCE 1950

West Bengal | Bihar | Uttar Pradesh | Jharkhand

Chhattisgarh | North East | Madhya Pradesh

SEN FEEDS | SEN BROTHERS PVT LTD | URBAN HI BREED FARM LTD

HI BREED AVIAN RESEARCH & INTERGRATORS | HI BREED INTERNATIONAL SALES & SERVICE

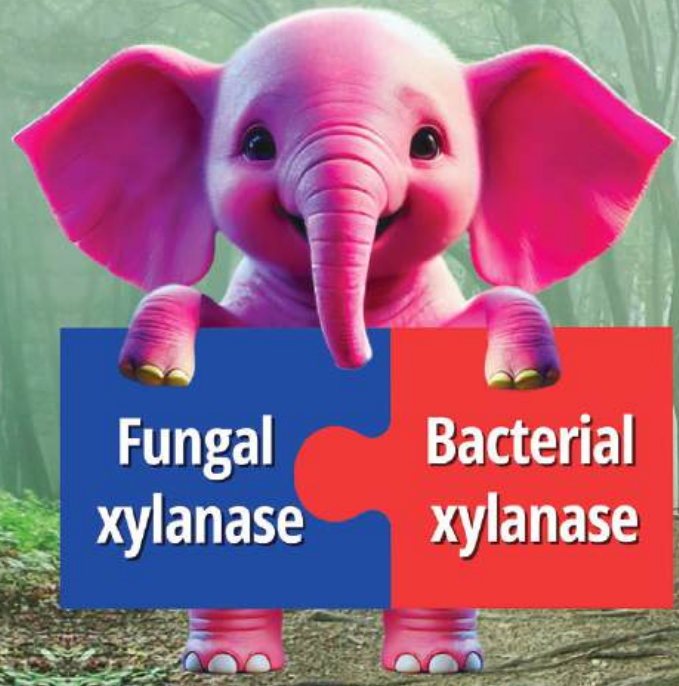
22 R.N. Mukherjee Road, Kolkata - 700001

www.senindia.co.in mail@senindia.co.in (033)40070525

LUMIS ENZYMES

XylaFaB

Unique Combination of Multiple Xylanases



www.xylanase.com

BENEFITS OF XYLAFAB

- ✓ Novel multi-xylanase combination
- ✓ Exceptionally thermostable
- ✓ Contains other NSP enzymes as side activities
- ✓ Releases entrapped nutrients
- ✓ Hydrolyses various NSP's in feed
- ✓ Helps to reduce the feed cost substantially

OUR OTHER UNIQUE PRODUCTS

Pro3ase	LUMIPHYTASE	LumiMan	LBzyme Prime
Acid+Neutral+Alkaline	Fast Acting Phytase	A Versatile Mannanase	Customised Multi-Enzyme
www.protease.com	www.phytases.com	www.mannanase.com	www.feedenzymes.com

info@feedenzymes.com