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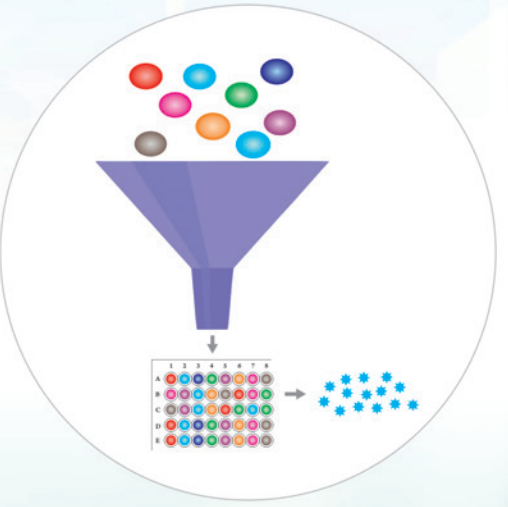

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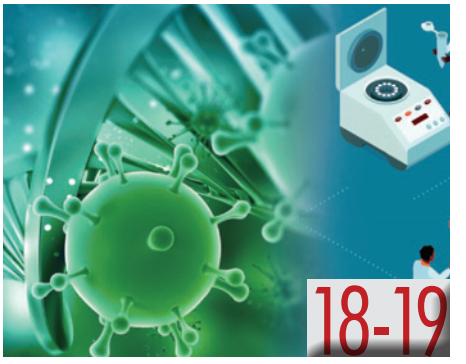

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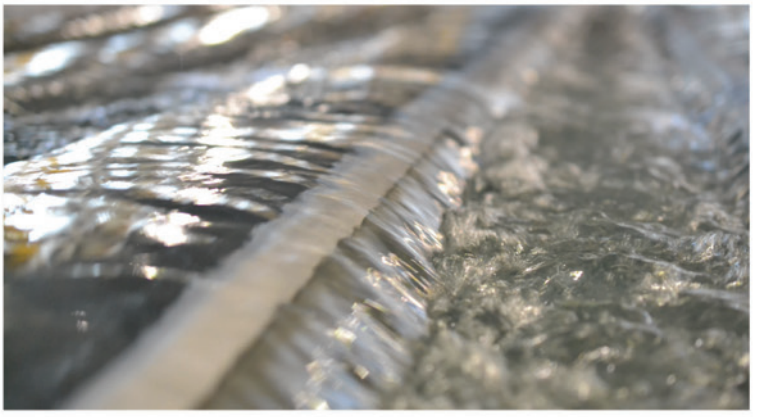

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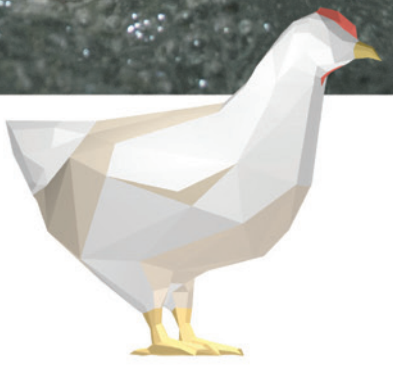

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GULF CONFLICT TO FEED COSTS: THE RIPPLE EFFECTS

The unfolding geopolitical tensions in the Middle East are once again reshaping global trade dynamics, energy markets, and supply chains; developments that may appear distant but carry tangible implications for India's poultry sector.

At the heart of the issue lies volatility in crude oil prices. Any escalation in conflict across key regions such as the Gulf can disrupt oil supplies, pushing up fuel costs. For India, a major oil importer, this translates into higher transportation, logistics, and feed input costs. Poultry production, already sensitive to fluctuations in maize and soybean prices, could face additional pressure as freight and energy expenses rise.

Equally significant is the impact on global grain trade. The Middle East is a crucial transit and demand hub, and instability can disrupt shipping routes and increase insurance premiums. This could indirectly influence feed ingredient availability and pricing in India, tightening margins for producers.

Currency fluctuations are another concern. A strengthening US dollar, often a by-product of global uncertainty, can make imports more expensive, affecting feed additives, vaccines, and breeding stock sourced internationally.

However, amid these challenges lie opportunities. As global supply chains recalibrate, India could strengthen its position as a reliable supplier of poultry products to alternative markets, particularly in Asia and Africa.

The current situation underscores a larger truth: the poultry sector is no longer insulated from global geopolitics. Strategic foresight, diversification of supply chains, and policy support will be critical in navigating this evolving landscape, ensuring resilience in the face of uncertainty.

G. N. Ghosh
Managing Editor

Hygiene Meets Compliance in Poultry Farming in Europe

There are some interesting developments taking place in Europe regarding the cleaning and disinfection of drinking water in poultry production, particularly when it comes to treating drinking water while the animals are present in the house. Authorities are increasingly keeping a close watch on farmers when they use products at the farm, such as cleaning and disinfection agents.

Authorities are very clear about which products may or may not be used at a poultry farm. This is regulated at the European level by the European Chemicals Agency (ECHA). For the poultry sector, ECHA recognises 3 key types of registrations:

- PT03: Products that may be used for disinfecting animal housing, equipment, and vehicles
- PT04: Products that may be used to disinfect surfaces and equipment that come into contact with food or feed, including poultry processing
- PT05: Products that may be used to treat or disinfect drinking water for poultry

This means that when a farmer uses a disinfectant, it should have an ECHA registration for the correct PT category. This ensures:

- The product is officially approved and tested for use around animals
- The farmer is compliant with EU legislation and won't face regulatory issues. No risk of a fine or a recall
- There is traceability and safety assurance for food production and animal welfare

Put simply, products registered under PT3 and PT4 are only intended for use when poultry houses are empty. Only products holding PT3, PT4 and PT5 approvals can be safely and legally applied in empty houses and while birds are present.

People often say, "a chain is only as strong as its weakest link". Interestingly, the same applies to your animals' drinking water system. There can be a significant difference between the quality of the water coming from the first nipple and that from the last one. Contamination and microbial growth rarely originate from the water source itself – they develop within the system.

This means that while the water from the first nipple may still be of very high quality, the water further down the line can already be of poor quality.

There are several possible reasons why contamination occurs within the system. One common cause is the use of additives in the drinking water. Nutritional supplements such as organic acids, vitamins, and medications can leave behind a biofilm inside the

drinking system. No matter how small that biofilm is, it often serves as a breeding ground and hiding place for bacteria, fungi, and viruses.

It is also observed that the water temperature gradually increases as it moves through the drinking system. This also affects the growth of microorganisms, as they thrive particularly well at slightly higher temperatures. Therefore, this is another important factor contributing to the greater likelihood of microbial contamination towards the end of the drinking system.

It is, therefore, of great importance to regularly clean the entire drinking water system to remove all microorganisms – with particular emphasis on cleaning all the way to the last nipple. Only PT5 approved products belong in the drinking line during the production cycle.

It is essential to verify in the ECHA database whether a biocide, in addition to PT02, PT03 and PT04, also holds a PT05 registration. Only PT05 registered products are permitted while poultry is present in the barn, ensuring the drinking lines remain free of biofilm and that birds receive clean, safe drinking water.

Farms where the incoming water already contains organic or microbial contamination :

- Livestock operations with long production cycles, such as breeder and layer farms
- Producers who frequently administer additives, vaccines, or medicines via the drinking water
- Large, intensive poultry farms with long water systems that require effective cleaning and disinfection right up to the final nipple

In short, PT05 registration is the only guarantee that a product is legally approved and effective for maintaining clean drinking lines and water while birds are present, the release added.

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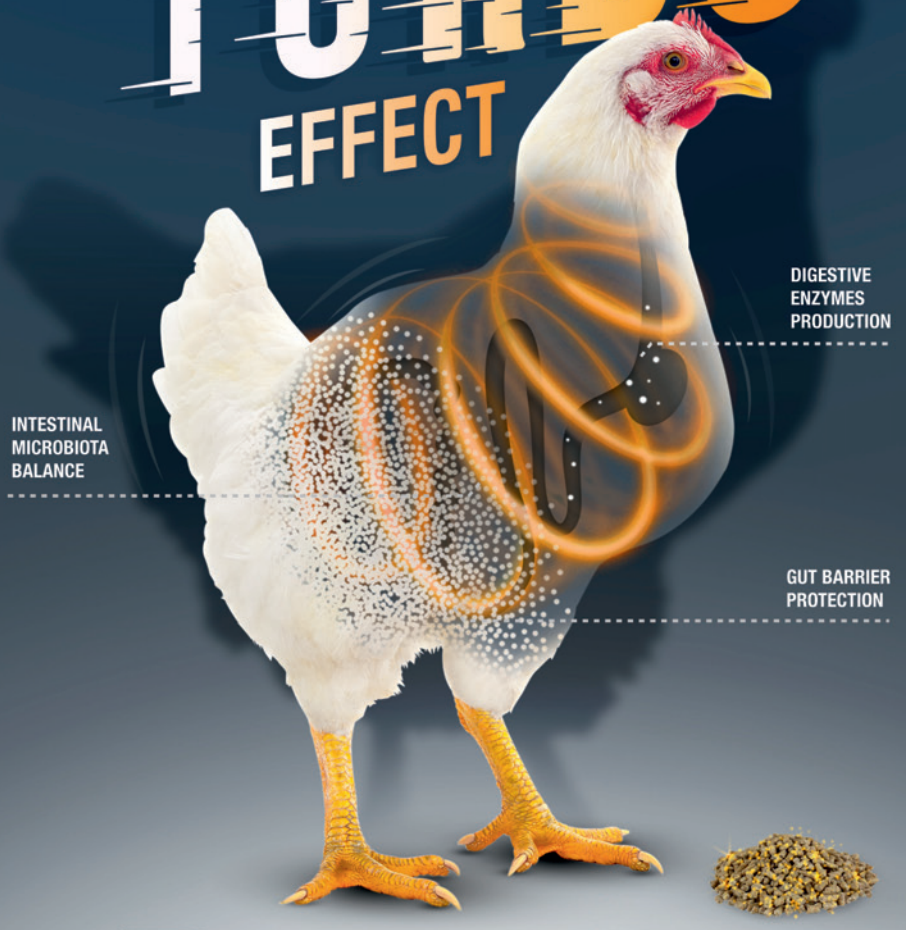

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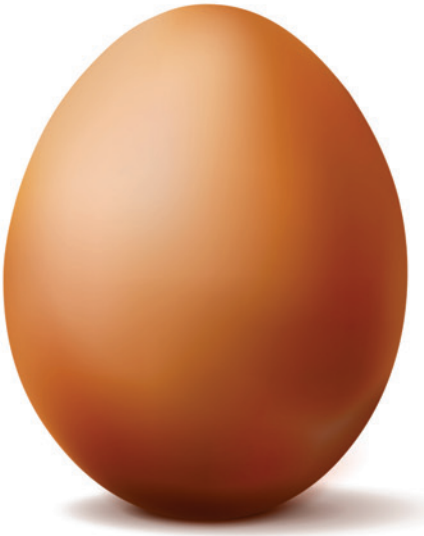

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Production Performance of Commercial Layer Chicken Fed with Silk Worm Pupae Meal

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The biological experiment was conducted for finding silk worm pupae meal as an alternative protein source in commercial layer feed by using fifty-four commercial layer chicken (White Leghorn) at the age of 25th week, belonging to single hatch by providing adaptation period for two weeks. These birds were randomly grouped into three treatment groups with three replicates of six birds each and fed with experimental feed; T1 (Control - Basal diet), T2 (Basal diet + 2% Silk worm pupae meal) and T3 (Basal diet + 4 % Silk worm pupae meal), for evaluating production performance for three egg laying periods. The significant difference (P≤0.05) was observed in body weight (g), T3 (Basal diet + 4% silkworm pupae meal) group birds recorded higher body weight in all three-egg laying period compared to other treatment groups.

There was no significance (P≥0.05) for feed consumption (g), feed efficiency per dozen eggs and feed efficiency per kg egg mass among the treatment groups. The mean hen day egg production (%) and hen housed egg production (number) for three laying period showed significant (P≤0.05) difference between the treatment groups. The livability was 100% for all treatment groups during the experimental period. There was no significance (P≥0.05) difference observed in internal and external egg quality parameters except eggshell thickness and shape index (P≤0.05). Based on this experiment, inclusion of silkworm pupae meal at 4% level in commercial layer feed performed better with respect to production parameters and egg quality traits. Hence, the silkworm pupae meal up to 4% level could be included as an alternate protein source in commercial layer feed.

Effect of Single Cell Protein Supplementation on The Performance of Broiler Chicken

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Single Cell Protein (SCP) is a protein obtained from unicellular things such as dried cells of microorganisms like yeast, fungi, algae and bacteria. These microbes have shorter generation time for quick transformation, do not require arable lands or any particular season to grow and have the capability of continuous production in any region of the world. SCP may become a potential alternative protein source for poultry feed additives in commercial purpose. To assess the effect of supplementation of graded levels of SCP on body weight gain, feed intake, FCR, immunity status, intestinal microbiota, and histology of vital organs,120 Vencobb broiler birds of single hatch were randomly divided into 4 treatment groups. Each group consists of 3 replicates with 10 birds each. The dietary treatments were: T1: Basal diet; T2: Basal diet containing 2% SCP; T3: Basal diet containing 4% SCP and T4: Basal diet containing 6% SCP.

The experiment was carried out for five weeks in deep litter system and fed as per BIS, 2007. Body weight gain and FCR was significantly (P<0.05) improved in 6% supplemented birds than others. Antibody titre measured against Ranikhet disease (ND) vaccine and cutaneous basophilic hypersensitive response against PHA-P was significantly (P<0.05) higher in SCP supplemented birds than control. E. coli, Salmonella count was significantly (P<0.05) decreased and Lactobacillus count was increased in treated birds than control. Villi length, villi width and crypt depth was significantly (P<0.05) increased in SCP supplemented birds.

It may be concluded that SCP supplementation @ 6% in broiler chicken improved the body weight gain, FCR, immunity, intestinal lactobacillus count and intestinal morphometry in broiler chicken.

Effect of Feeding Flaxseed on Egg Production, Internal and ExternalEgg Quality Traits in Aged Laying Hens

Harshal Bava, M. Wade*, S.J. Manwar, Rushikesh Ingale and Puja Shettiwar

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A study was conducted at the Poultry Research and Training Centre, Post Graduate Institute of Veterinary and Animal Sciences, Akola, to investigate the effect of feeding flaxseed on egg production in aged laying chickens. The study utilised 216 White Leghorn hens aged 57 weeks, randomly divided into 6 groups, each with 6 replicates consisting of 6 birds per replicate. The control group (T1) received a standard diet, and groups (T2-T6) received diets supplemented with Flaxseed powder at 1, 2, 3, 4, and 5 g/kg of feed, respectively. Over a span of 16 weeks, production performance was monitored, and egg quality was assessed biweekly using 2 eggs per replicate chosen randomly. The Flaxseed powder supplemented groups showed significantly

higher percent weekly egg production and HDEP (P<0.01) and egg biomass (P<0.01) compared to the control, except T2. Among the supplemented groups, T6 exhibited the highest egg production and HDEP. The egg biomass in T3, T4, and T5 was statistically equal but was significantly higher than that of T1 and T2. Furthermore, the FCR egg number basis and FCR egg biomass were significantly lower in T6, T5, and T4 compared to the other groups.

However, parameters such as feed consumption, HHEP, and average egg weight did not show significant differences. Group T6 demonstrated the highest HHEP, average egg weight and lowest feed consumption. The yolk colour score was significantly higher in FS-supplemented groups, particularly in T6. No significant variations were observed in other egg quality parameters (P>0.05). Egg shape index and yolk index were highest in group T2 and egg surface area in T1 while egg weight, albumin index, Haugh Units, percent eggshell weights and eggshell thickness peaked in group T6. In conclusion, supplementing the basal diet with up to 5g/kg of flaxseed may enhance production performance and partially improve egg quality parameters in laying hens.

Studies on Growth Performance and Gut Health of Broilers Incorporated Rice Distillers Dried Grains with Solubles (RDDGS)

R.L. Werulakar, A.P. Dhok, N.S. Ghuge*, S.V. Chopde, M.R. Jawale, P.K. Bacche, B.N. Ramteke, S.R. Lende and G. Roupesh

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The study was conducted on 300-day-old Vencobb 430 straight run commercial broiler chicks randomly assigned to 5 dietary regimens of 60 birds having 4 replications of 15 birds each. The group T0 was control and received standard diet as per BIS (2007) specifications. The treatment groups were fed with rice DDGS (RDDGS) as group T1 fed 15% rice DDGS, T2 with 15 percent rice DDGS and supplemented with protease enzyme @ 300g/ton of feed, T3 with 20% rice DDGS and T4 with 20% rice DDGS, supplemented with protease enzyme @ 300g/ton of feed. The final body weights were significantly (p<0.01) higher and FCR was better for control group and comparable with 15% RDDGS group with and without protease supplementation. The metabolisability of nutrients did not vary significantly except CP metabolisability, which was higher for control group, however CPmetabolisability for protease supplemented 15 and 20% rice DDGS group wascomparable with control diet. The total viable count (TVC), E-coli count and also villi morphology did not vary significantly.

There was no negative impact on histological changes in intestine of interaction between DDGS and enzyme. The carcass traits revealed nonsignificant differences for dressing percentage, overall giblet weight and abdominal fat. It was concluded that broilers fed diet including 20% rice DDGS fetched more profit than that of 15% rice DDGS and control diet, however broilers supplemented with protease on 15 percent rice DDGS diet proved to be more economical.

Use of Esterified Butyrates as Replacement to Antibiotic Growth Promoters in Broilers

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The study was conducted to evaluate use of Esterified Butyrates on production performance, gut health and immunity of broilers. The trial was conducted on 360 'Cobb 430' strain, straight-run broilers for five weeks. The day-old chicks were randomly divided into four groups viz. A, B, C and D of 90 birds each, which were further sub-divided into six replicates of 15 birds each. Group A was the control, receiving corn soybean diet and Group B received diets supplemented with Lincomycin @ 250 g/T. The birds from Group D receiving diet with Esterified Butyrates @ 600 g/T, exhibited the numerically higher live weight, total gain in weight, lower feed consumption with better feed conversion ratio and European Production Efficiency Factor (EPEF) as compared to all treatment groups indicating superior growth and efficiency of production. Birds from Group D also recorded the lowest mortality rate, suggesting better overall health. The birds from Group C receiving diet with Esterified Butyrates @ 300 g/T, recorded the highest net profit per bird and per kg suggesting good economic returns.

There was no significant difference in total viable count, total coliform count, intestinal villi length, crypt depth and their ratio by the birds from all treatment groups including the birds from control. The birds from group C recorded better HI antibody titer (@ 8 HAU) for NCD in the third week whereas birds from group D recorded better HI antibody titer (@ 8 HAU) for NCD in the fifth week.

Thus, it is concluded that, the supplementation of Esterified Butyrates @ 600 g/T, in diet is useful in enhancing production performance, while supplementation of Esterified Butyrates @ 300 g/T, in diet is useful in recording better economic returns. Therefore, Esterified Butyrates could be a good alternative to antibiotic growth promoters in broilers.

Source: 39th Annual Conference & Symposium of IPSACON 2024

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Article

New Gen Technologies in Poultry Disease Diagnosis

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Former and Founder VC, KVAFSU, Bidar,
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In the rapidly evolving landscape of modern agriculture, the poultry industry faces significant challenges from infectious diseases that threaten global food security and economic stability. Traditional diagnostic methods often rely on manual observation and centralised laboratory testing, which can be time-consuming and labour-intensive. The emergence of next-generation technologies is revolutionising this field by enabling earlier, faster, and more accurate disease detection.

Next-generation ("New Gen") technologies in poultry disease diagnosis are shifting the industry from reactive, laboratory-dependent testing to real-time, on-farm, and predictive monitoring. These advancements primarily leverage Artificial Intelligence (AI), the Internet of Things (IoT), and rapid molecular tools to identify pathogens before clinical signs become widespread. The following are the next generation technologies.

1. AI-Driven Visual and Behavioural Monitoring

Artificial Intelligence, particularly Computer Vision, allows for non-invasive, continuous surveillance of flocks to detect subtle signs of illness.

- **Fecal Image Analysis:** Mobile applications now use deep learning models like MobileNetV2 and Xception to classify droppings. These tools can identify diseases such as Coccidiosis, Salmonellosis, and Newcastle Disease with over 95% accuracy
- **Behavioural Anomalies:** AI algorithms analyse video feeds to track changes in movement, feeding, and social interaction. For example, YOLOv8 models can detect foot pathologies (like bumblefoot) or monitor dustbathing behaviours as welfare indicators
- **Thermal Imaging:** Infrared thermography (IRT) monitors individual bird body temperatures. High-precision systems can detect Avian Influenza (H9N2) and Newcastle Disease within 24 hours of infection by identifying fever patterns

2. Digital Bioacoustics and Vocalisation Analysis

Microphones paired with machine learning process barn sounds to identify respiratory distress.

- **Early Detection:** Systems can recognise specific sounds like rales (respiratory rattles), gasping, or coughing days before visible symptoms appear
- **Infectious Bronchitis (IBV):** Automated audio analysis has reached up to 94% accuracy in distinguishing infected birds based on wavelet entropy and neural networks

3. Rapid Molecular and On-Site Diagnostics

New molecular tools bypass the need for multi-day lab cultures.

- **LAMP (Loop-mediated Isothermal Amplification):** This technology provides highly specific results in 30–60 minutes at a constant temperature, eliminating the need for expensive thermal cyclers. It is ideal for field use in detecting Avian Influenza and IBV
- **Next-Generation Sequencing (NGS):** Portable devices like

Oxford Nanopore MinION: allow for "metagenomic" monitoring, where all viruses and bacteria in a sample (respiratory or cloacal) are identified simultaneously, providing a complete "microbiological status" of the farm

CRISPR-Based Biosensors: Adapting gene-editing technology for diagnostics, CRISPR-based tests offer high-precision, rapid identification of specific pathogen DNA or RNA directly on the farm

4. IoT and Predictive Big Data Analytics

- **Sensor Networks:** IoT sensors continuously monitor environmental factors (ammonia, CO_2, humidity) and physiological markers (via wearable sensors) to provide real-time alerts for potential outbreaks
- **Predictive Models:** By integrating farm data with environmental data and internet-based trends (like social media mentions of outbreaks), big data platforms can predict where a disease is likely to emerge next

Specific Mobile Apps for Poultry Fecal Diagnosis

Specific mobile apps for poultry fecal diagnosis utilise AI and deep learning to identify diseases like Coccidiosis, Salmonellosis, and Newcastle Disease directly from photos of droppings.

Commercial and Field-Ready Apps

- **Chicken Checker:** Launched by Phytobiotics, this AI-powered tool allows users to photograph feces and receive a health score for their flock. It is available on Google Play and is designed to detect upcoming health challenges by correlating fecal analysis with production data

- **PoultryCareAI:** This app features a fecal analysis tool where users take or upload photos of droppings to get health recommendations and detect early signs of infection. It also includes flock and coop monitoring features
- **CluckDoc:** Targeted primarily at backyard chicken owners, CluckDoc uses AI for photo-based diagnosis, breed identification, and feed analysis

Academic and Emerging Tools

- **KUKU (or Chicken Checker AI):** Developed by researchers at Jimma University, this app uses a deep learning model (trained on over 8,000 images) to identify diseases with up to 98.7% accuracy
- **Chicken AI:** An open-source project available on GitHub, this mobile application utilises a TensorFlow Lite model based on the DenseNet architecture to provide real-time, offline fecal disease detection
- **SmartPoultry:** A research-based initiative focused on the early detection of diseases from smartphone-captured fecal images using lightweight architectures like MobileNetV2 for field deployment

Main Disease Targets

These apps typically focus on distinguishing between four primary categories:

1. **Healthy:** Normal fecal appearance
2. **Coccidiosis:** Often identified by bloody or mucoid droppings
3. **Salmonella:** Identified by watery or yellowish/white droppings
4. **Newcastle Disease:** Often associated with greenish, watery diarrhea

Robotic Surveillance

Robotic surveillance is transforming poultry health management by moving from manual, periodic checks to autonomous, 24/7 monitoring. These robots use a combination of computer vision, thermal imaging, and IoT sensors to detect disease indicators such as abnormal body temperature, reduced activity, or changes in droppings.

1. Key Commercial Surveillance Robots

Several commercial robots are already deployed to monitor flock health and manage the environment to prevent disease:

- **Scout (formerly ChickenBoy):** A ceiling-mounted, rail-running robot from Faromatics. It uses thermal and visible-light cameras to detect sick and dead birds, monitor leg health, and even predict intestinal diseases by analysing dropping colours
- **Octopus XO:** An 80kg autonomous ground robot equipped with LiDAR for navigation. It identifies and localises dead chickens while continuously mapping temperature, humidity, and ammonia levels
- **Spoutnic NAV:** Developed by Tibot (now part of Octopus Biosafety), this robot patrols broiler and breeder houses to stimulate bird movement. By reducing sedentary behaviour, it helps prevent foot pad dermatitis and hock burns

2. Specialised Disease & Mortality Detection

Modern robots use advanced AI models to achieve high accuracy in identifying health issues:

- **Mortality Identification:** Robots like those from Birds Eye Robotics use rotating shovel mechanisms to identify and pick up dead birds, preventing the spread of pathogens. Some research models using YOLOv4 algorithms have achieved up to 97.5% reliability in detecting mortality
- **Thermal Surveillance:** "Nanny robots" use infrared thermal imaging to find birds with abnormal temperatures (fever), a key early sign of viral infections like Avian Influenza
- **Acoustic Monitoring:** Some systems listen for respiratory sounds (rales), such as coughs or sneezes, which can signal diseases like Infectious Bronchitis or Newcastle Disease before they are visually apparent

3. Disease Prevention through Automation

Robots also act as a primary line of defense by maintaining biosecurity:

- **Litter Management:** Ground robots like the Octopus Scarifier aerate litter to prevent the fermentation that causes high ammonia levels, which stresses bird immune systems
- **Automated Disinfection:** The Octopus Poultry Safe can autonomously nebulise biocides across a barn to eliminate pathogens like E. coli or Staphylococcus, significantly reducing the need for antibiotics

4. Comparison of Commercial Robotic Systems

Robot	Mounting	Primary Function	Disease Indicators Tracked
ChickenBoy	Ceiling/Rail	Health Monitoring	Gait, dropping colour, air quality
Octopus XO	Ground	Surveillance/ Litter	Mortality, NH_3/CO_2 levels
Spoutnic	Ground	Activity Stimulation	Movement patterns, litter quality
Poultry Patrol	Ground	Remote Warning	Sick/deceased bird identification

The Octopus Poultry Safe robot is an autonomous ground robot designed by the French company Octopus Biosafety to sanitise and disinfect empty poultry houses without human intervention. It plays a crucial role in improving biosecurity and reducing the reliance on antibiotics in poultry production.

Main Features and Functionality

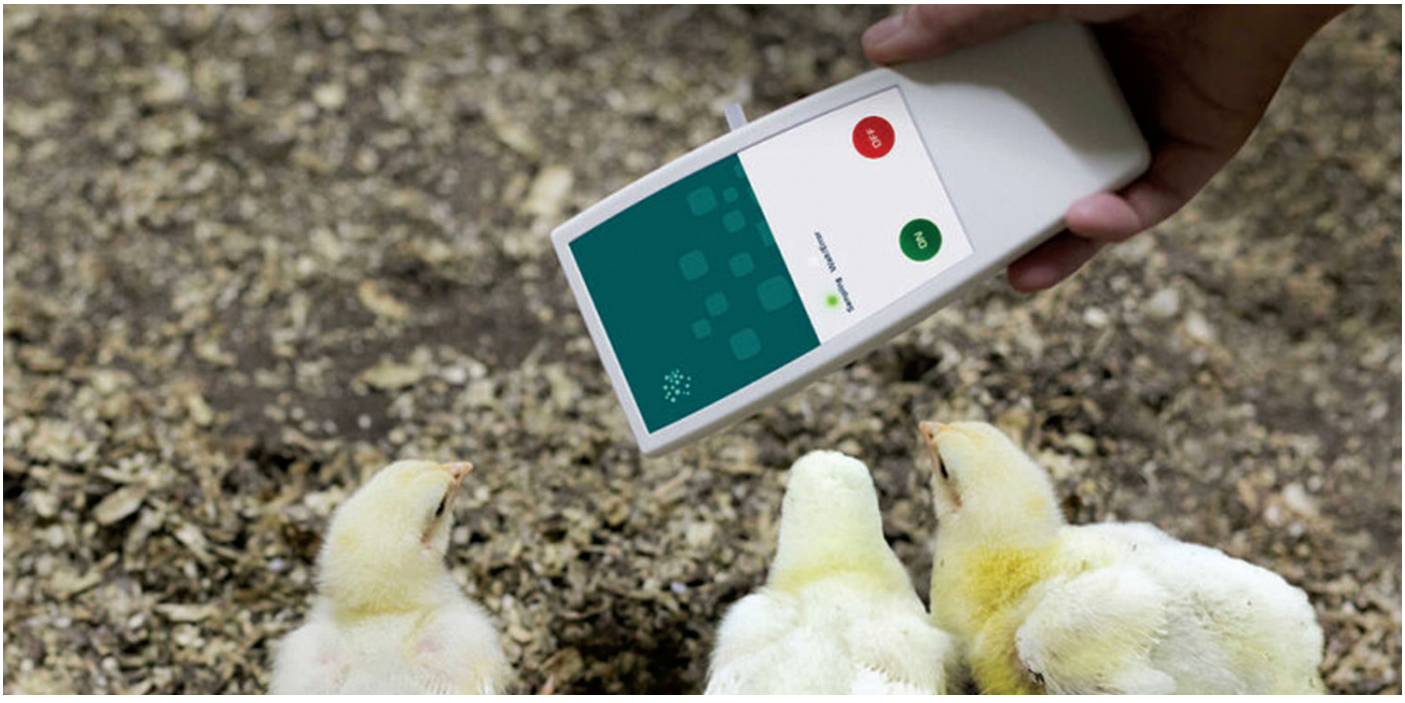
- **Autonomous Operation:** The robot navigates autonomously within the poultry house, using an advanced navigation system combining shape detection, triangulation, and anti-collision technology (since GPS doesn't work indoors). It is self-recharging, allowing for continuous 24/7 operation if needed
- **Disinfection via Nebulisation:** The primary function is to deliver liquid disinfectants and sanitisers via nebulisation, saturating the entire targeted area efficiently. This method is highly effective in controlling pathogens in the environment
- **Litter Treatment:** It is equipped with a scarifier mechanism that turns and aerates the litter. This mechanical action helps prevent the formation of a crust, reduces ammonia levels, and inhibits the proliferation of harmful bacteria and fungi like Staphylococcus aureus and E. coli
- **Environmental Monitoring:** While working, the robot collects critical environmental data at bird level, including:
  - Temperature
  - Humidity
  - Carbon dioxide (CO_2) levels
  - Sound and light levels
- **Disease Prevention:** By maintaining optimal litter and air quality and performing thorough disinfection, the robot significantly reduces the bacterial challenge in the house, which in turn improves animal welfare and reduces mortality rates
- **Reduced Human Contact:** Its autonomous nature minimises the need for human entry into potentially contaminated areas, enhancing overall farm biosecurity and preventing cross-contamination between houses or farms

Model Variations

The Octopus Poultry Safe is part of a line of robots from Octopus Biosafety, which includes the Octopus Scarifier (designed specifically for litter aeration in the presence of birds) and the XO series (which offers modular options for scarifying and disinfection). The Poultry Safe version is particularly designed for the thorough sanitation of empty houses between flocks.

Summary

New generation technologies in poultry disease diagnosis are shifting the industry from reactive, laboratory-based testing to proactive, real-time, on-site, and automated monitoring. Key innovations include molecular diagnostics, biosensors, AI-driven computer vision, and IoT-enabled environmental monitoring to detect diseases like Avian Influenza, Newcastle Disease, and Coccidiosis before they become widespread.



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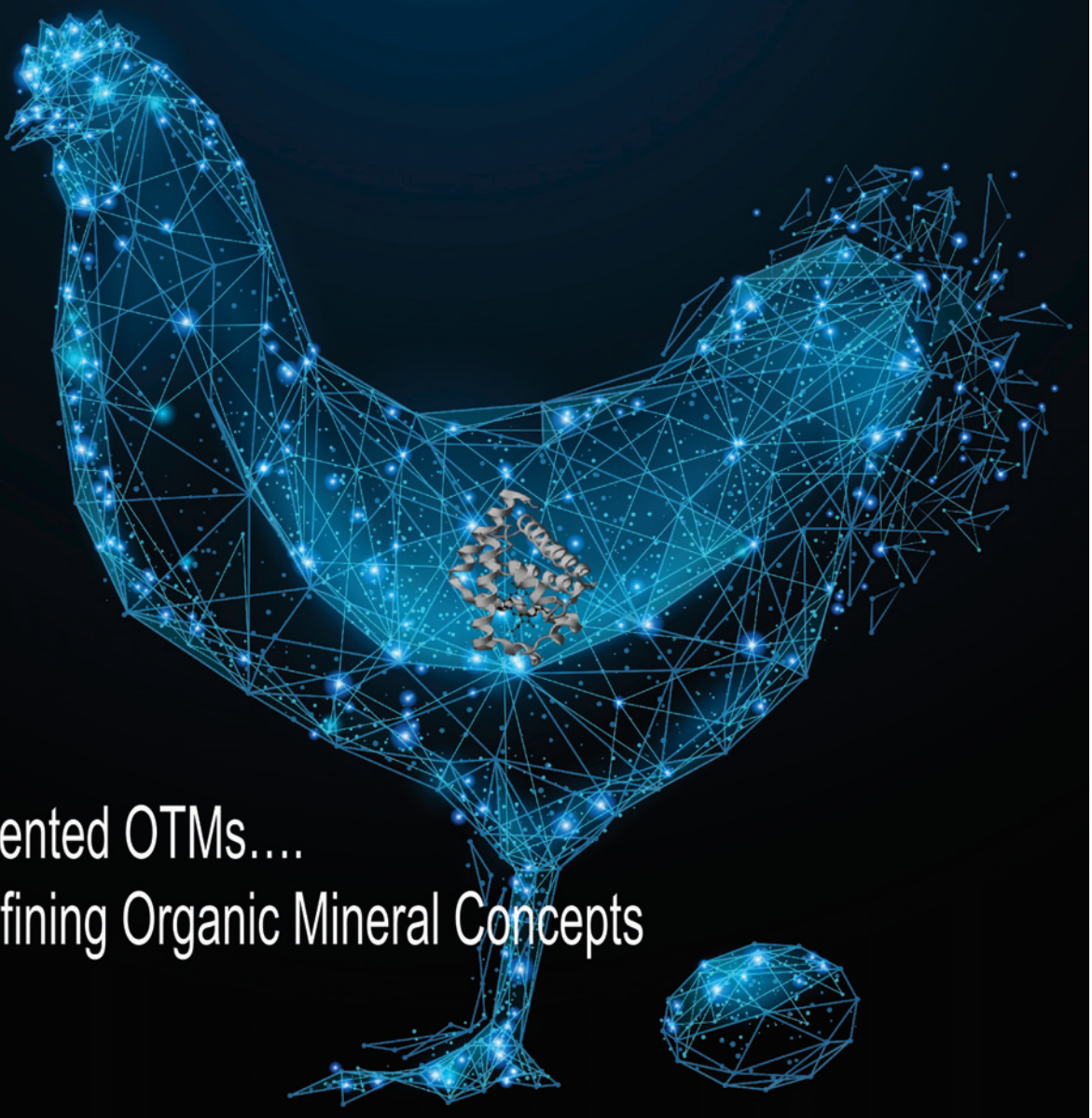

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Article

Huveshield NDK: Field Validation of Protective Immune Response Against Newcastle Disease Virus in Poultry

Team Huvepharma

Key Takeaways

- Huveshield NDK vaccination induced protective HI antibody titres in breeder, layer, and broiler flocks under commercial field conditions
- Robust humoral immune responses were observed after more than three weeks post-vaccination
- The vaccine demonstrated consistent immunogenicity across multiple geographic regions of India
- Observed regional variations in antibody titres highlight the importance of optimal vaccine handling, administration practices, and flock management
- The results support Huveshield NDK as an effective component of Newcastle Disease prevention programs in commercial poultry production

Introduction

Huveshield NDK is an inactivated Newcastle Disease vaccine formulated with the lentogenic LaSota strain of Newcastle Disease Virus (NDV) in an oil and water emulsion. Huveshield NDK is designed to provide sustained antigen release, promoting prolonged immunestimulation and durable protective immunity against the target pathogen. Monitoring vaccine induced immunity under field conditions is essential for evaluating vaccine performance. Serological assessment of NDV specific antibodies remains a widely accepted approach for measuring immune response following vaccination.

Technical Note

The Hemagglutination Inhibition (HI) assay is widely recognised as the gold standard serological method for evaluating antibody mediated immunity against Newcastle Disease Virus in poultry. HI titres are commonly used to assess vaccination success and monitor immune status in commercial flocks.

Protective antibody levels detected in vaccinated birds indicate successful immunogenic stimulation following vaccination and provide an important indicator of population level protection against Newcastle Disease.

Objective

To evaluate the immunogenicity and field effectiveness of the Huveshield NDK vaccine by analysing the serological immune response in vaccinated poultry through determination of antibodytitres against Newcastle Disease Virus (NDV).

Study Period

October 2025 – February 2026

Study Set-up

Poultry farms located across different regions of India were included in the field evaluation. Breeder, layer, and broiler flocks were vaccinated with the Huveshield NDK vaccine according to the recommended vaccination schedule and dose.

Blood samples were collected from vaccinated birds after more than three weeks post-vaccination to assess the development of humoral immune response. Serum samples obtained from these blood samples were subjected to serological analysis.

Study Design

This study represents a retrospective serological evaluation of Newcastle Disease vaccination response in poultry populations. The analysis was performed using 310 serum samples collected during routine monitoring of 20 vaccinated flocks between October 2025 and February 2026.

Measurement Parameters

The immune response to vaccination was assessed using the following parameters:

- Hemagglutination (HA) test for determination of NDV antigen titre before HI test
- Hemagglutination Inhibition (HI) test for quantification of NDV specific antibodies in serum samples
- Mean HI anti body titres across different poultry farms
- Uniformity of immune response within flocks

Results

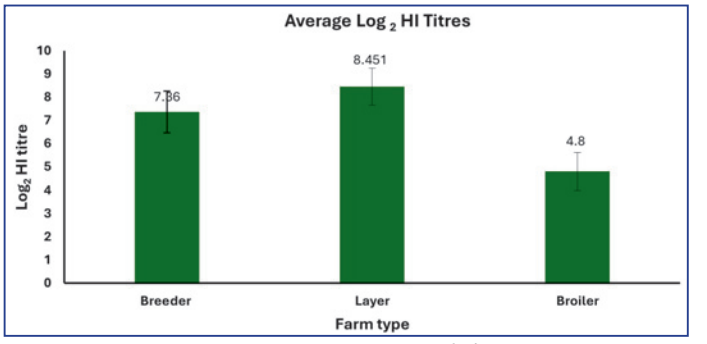

Figure : Mean Log_2 Hemagglutination Inhibition (HI) antibody titres against Newcastle Disease Virus (NDV) in serum samples collected after more than three weeks post vaccination with Huveshield NDK across different poultry farms. Note : HI titres were determined using 4 Hemagglutinating Units (4 HAU) of NDV antigen. Values represent average antibody titres measured from field samples collected across multiple poultry farms in India during the study period (October 2025 - February 2026).

Serological analysis revealed that all vaccinated poultry flocks developed protective levels of antibodies against Newcastle

Disease Virus, as determined by the Hemagglutination Inhibition (HI) test.

The mean HI titres observed in different poultry farms indicated a robust humoral immune response following vaccination with Huveshield NDK. However, analysis of the data across different geographic regions showed zone-wise variation in antibody titres, suggesting differences in immune response intensity between locations. Such variability may arise from factors including flock management practices, vaccination handling, environmental conditions, and bird health status.

Interpretation

The data demonstrate that vaccination with Huveshield NDK induced measurable antibody responses in breeder, layer, and broiler flocks. Higher HI titres indicate stronger humoral immunity and better protection against Newcastle Disease.

Serological response measured by HI titres post ND vaccination are commonly used as an indicator of protective immunity and may reflect cross reactive immunity against heterologous field genotype such as VII & XIII.

Field Study Disclaimer

The data presented in this bulletin are derived from field monitoring of commercial poultry flocks vaccinated with Huveshield NDK between October 2025 and February 2026. Immune responses observed under field conditions may vary depending on factors including flock management practices, vaccination schedule and technique, environmental conditions, and overall bird health status.

Conclusion

Field serological monitoring demonstrated that Huveshield NDK vaccination consistently induced protective levels of NDV specific antibodies in breeder, layer, and broiler flocks under commercial poultry production conditions.

The strong humoral immune responses observed across multiple geographic regions reinforce the reliability, immunogenicity, and field performance of Huveshield NDK as an effective vaccine for Newcastle Disease control in poultry.

References on Request

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Article

Allow Artificial Intelligence to Supplement Not Substitute Native Wisdom in Livestock Management

"Artificial intelligence is not a substitute for human intelligence; it is a tool to amplify human creativity and ingenuity," explains Fei-Fei Li, Artificial Intelligence and IT Professor at Stanford.

A dairy farm of 1500 odd cattle in the Netherlands, each of the animals yielding an upward of thirty litres milk per day, managed by its sole owner, a middle aged lady with a part time support staff numbering a mere three, amazed me no end. Alongside the dairy was hundreds of acres of farmland growing fodder and a cow dung fed captive power plant. Robots would guide the animals in batches to the milking booth, not before checking their basic health and hygiene parameters. A set of machines would wash and sanitise their teats before another set begins milching. Both the quantity and quality of milk of each animal, including the composition of nutrients, were captured and displayed in real time. It is the tool of Artificial Intelligence (AI) that made it possible; I was a witness to it in the year 2019. Today, a few gentle taps on the screen of our smart phone gets us milk delivered home in a jiffy, thanks to AI powered apps. AI, thus, influences action and behaviour both at the production and consumption ends, of course during the supply chain too.

John McCarthy, regarded as one of the original creators of AI, gave it a rather simple and broad definition: "the science and engineering of making intelligent machines." AI refers to computer systems capable of performing complex tasks that historically only a human could do – reasoning, making decisions, or solving problems. At the most basic level, AI functions by taking in data and using an iterative processing system and different algorithms to learn from patterns. Algorithms are step-by-step instructions that guide a computer till the completion of the task – akin to an instruction manual that lets the machine know exactly what to do and when. It is these algorithm-driven machines that enabled the Dutch lady to professionally and scientifically manage her big dairy farm.

Feeding nearly 10 billion people by the year 2050 is a formidable challenge, more so where agriculture driven growth is at risk, contributing to food insecurity, particularly in developing economies. Climate change compounds the risk by adversely affecting crop yields. It indeed is a tragic irony that one third of the food is wasted or lost. Livestock, in such a scenario, could play a much wider and more significant role. Animal products provide more than 60 percent of dietary protein in developed countries, compared to only about 23 percent in developing countries. There is, therefore, substantial room for expansion of livestock production in the emerging economies.

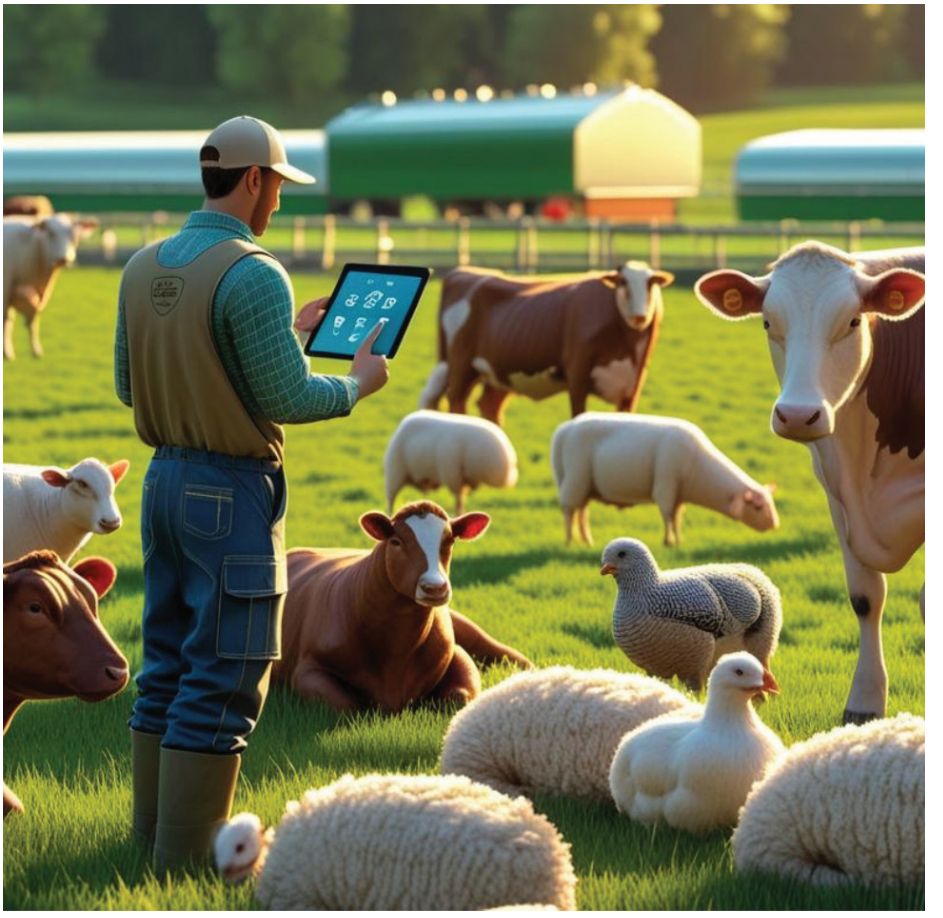
The livestock sector in India could be well characterised by borrowing the Dickensian idiom of the opening lines of A Tale of Two Cities. Our livestock is the biggest, yet it is the smallest: we are way ahead of others in sheer numbers yet way behind in the output of those numbers. We are the richest, yet we are the poorest: biggest and most diverse resource base, highest production but poor productivity levels; it is production by mass rather than mass production. The sector offers the spring of hope, but alongside also lurks the winter of despair: impressive and consistent growth over the years, yet levels of productivity and quality of produce remain matters of serious concern. The opportunities of harnessing AI for the advancement of livestock are several times over other activities because this sector has a very sound base of indigenous and traditional knowledge.

The most critical aspects in livestock management are the seed and the feed. Our entire artificial insemination (ai) programme is based on selection of parents on phenotype models – the Dam's milk yield and the Sire's female progeny's milk yield as the primary criterion. Our selection of animals is based merely on observation of physical attributes and anecdotal evidence; the chubby baby syndrome: fat means healthy. Move to genotype, wherein data of the ancestry, several generations in the past – from health to disease, breed to feed, milk to meat – is digitally available, quite akin to a horoscope generated by a learned pundit, now aided by AI, giving intimate details of the ancestors. The mantra: genetic makeup is more important than visible physical traits. Here, traditional wisdom gets the support of AI to select candidates for ai. But how does a small livestock farmer, who typically owns between one to five animals, afford genomic selection? It is the government who has to play a big, proactive and hand-holding role. Steps are already underway to create this vast database; these need to be accelerated, ensuring correct and reliable data and its easy and affordable access to farmers across the spectrum. The success rate of the ai programme, at an abysmally low 32%, would dramatically improve in both numbers and in the health and productivity of the progeny. The game-changing technology of sex sorted semen has the potential of revolutionising the

dairy sector and addressing the serious problem of stray cattle.

Poultry, India's fastest growing livestock sub-sector, stands to gain enormously from AI. Intelligent sensors and computer vision systems can monitor flock behaviour, feed and water intake, body weight, and early signs of disease in real time, enabling timely interventions that sharply reduce mortality and medication costs. AI-powered environmental control systems regulate temperature, humidity, and ventilation to optimise bird comfort and productivity. Predictive analytics can model disease outbreak risks — avian influenza or Newcastle disease — based on weather patterns and biosecurity parameters, allowing farmers to act well before an epidemic sets in. Breed selection, feed formulation, and egg quality assessment too can be greatly refined through machine learning. The challenge, as elsewhere in the livestock sector, is to make these tools affordable and accessible to the smallholder poultry farmer.

A genotypically selected or bred animal may begin healthy, but would require the right feed to remain and become healthier. The AI generated health and nutrition information of every individual animal could assist in micro planning the balanced feed and fodder requirement. The government's ration balancing programme seeks to achieve precisely this objective, but the effort requires more weight since the challenge is huge and the intervention too little.



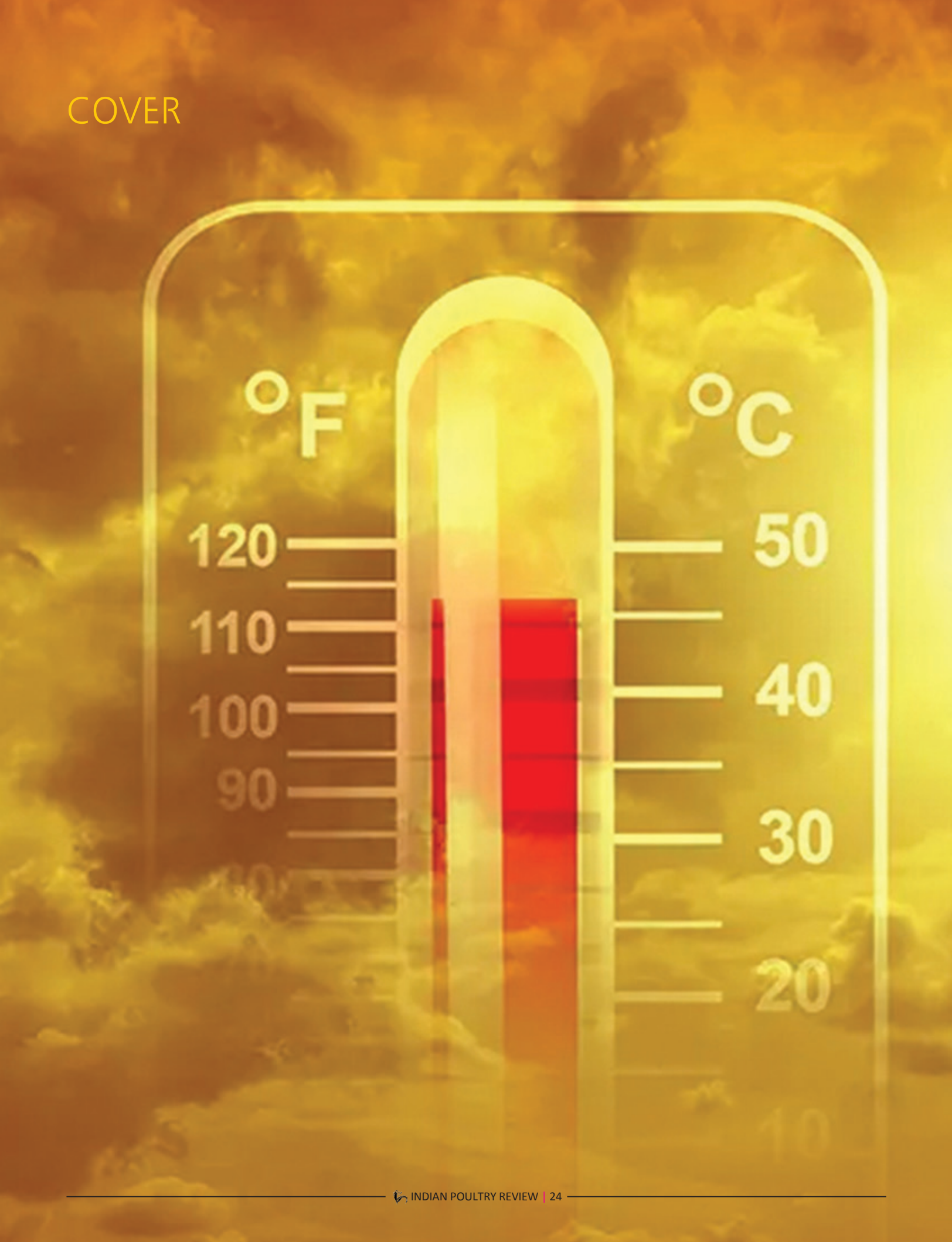
A robust database, such as the one being created through the Information Network for Animal Productivity and Health (INAPH), could create a multitude of livestock trading platforms to offer informed choice to both buyer and seller. But technology, when offered to the farmer, must be simple and understandable. INAPH should have a farmer friendly interface, imbibing from native wisdom too when it comes to using data for decision making. Digitalisation has been efficiently transforming the milk retail market and making inroads into processing activities.

A strategic infusion of AI for value addition could diversify our milk from a raw material to scores of products — from the elementary curd, paneer, khoya to a variety of cheese, chocolates and more. Most importantly, technology should lead us to product traceability. Absence of traceability is the single most powerful impediment to the export of our livestock products. Isn't it ironic that while we sit at the top of the production cliff in almost all products, our share in global trade, except for shrimp, is negligible? The discerning consumer, both overseas and domestic, demands to know the actual source and integrity of the product; and in the unorganised spread of our livestock, it is only digitalisation that could trace the source.

The moot question is how does the farmer access and reap the benefits of AI technology. He is small and unorganised, barely able to stay afloat. A sophisticated technology such as AI costs money, and this causes concern of inequities in the sector. A proactive approach by the central and state governments to make technology affordable, accessible and above all meaningful for the smallholder livestock farmer is of critical importance. The technology, in a nutshell, should lead the farmer to greater value of his efforts making livestock an attractive proposition, and further add similar value across the production and supply chains.

The boundless possibilities offered by technology and our innate ability to harness it should make the future of livestock decidedly brighter than the past and the present.

A sophisticated technology such as AI costs money, and this causes concern of inequities in the sector. A proactive approach by the central and state governments to make technology affordable, accessible and above all meaningful for the smallholder livestock farmer is of critical importance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EFFECT OF HEAT STRESS ON POULTRY PERFORMANCE

With scorching summer causing drastic results in the Indian poultry industry, **Prof. R.N.S. Gowda**, Former and Founding VC, KVAFSU, Bidar, Former Director, IAH&VB, Bangalore, Former Prof and University Head, Dept. of Patholgy, Veterinary College, UAS, Bangalore, provides analysis and mitigation strategies in an **IPR exclusive**

What is the Heat Stress Period in India?

Heat stress in India primarily occurs from March to June, with May being the peak month. These dangerous, often fatal, periods of extreme temperatures and high humidity are becoming more frequent, lasting longer, and affecting more states, including Maharashtra, Karnataka, and Tamil Nadu, as noted by India Meteorological Department.

What is the Effect of Heat Stress on Poultry?

Heat stress in poultry triggers widespread systemic failure, primarily causing reduced feed intake, high mortality, and poor production. Key effects include respiratory alkalosis from panting, intestinal inflammation ("leaky gut"), and oxidative stress, leading to poor egg quality and reduced meat yield (Fig.1.).

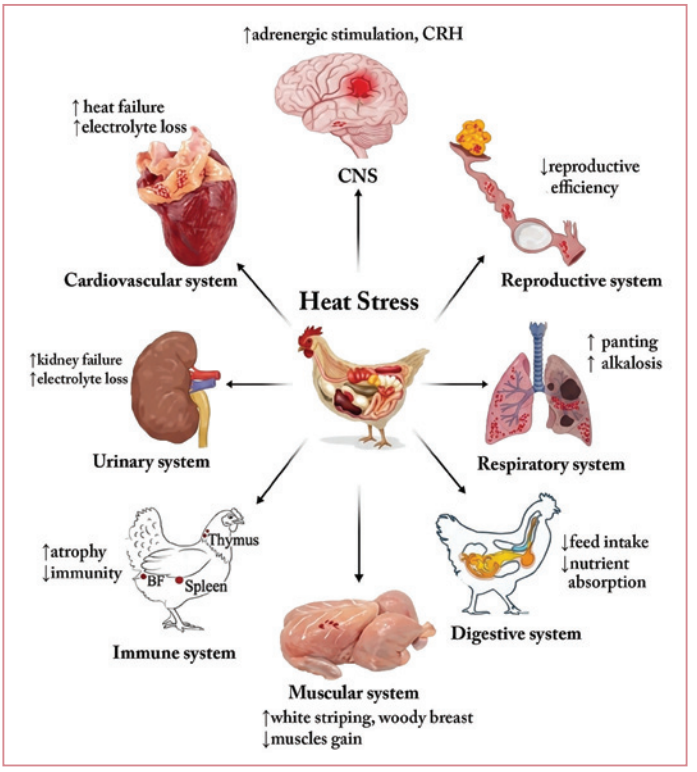


Fig.1: Effect of heat stress on different systems of poultry

Effects on Poultry Systems

- **Digestive System:** Reduced feed intake, decreased nutrient absorption, damaged intestinal barrier (leaky gut), and shorter villi, which allows bacterial toxins into the bloodstream
- **Respiratory System:** Increased panting (respiratory rate) to dissipate heat, leading to respiratory alkalosis (reduced CO_2 in blood) and blood pH imbalance
- **Reproductive System:** Reduced production, smaller egg size, and impaired shell quality (thin/soft shells)
- **Immune System:** Suppressed immunity, increased susceptibility to diseases, and higher mortality rates
- **Metabolic/Endocrine System:** Oxidative stress, reduced thyroid hormones (T3) reducing metabolism, and increased corticosterone
- **Musculoskeletal System:** Reduced muscle growth, lower protein content, and poor meat quality (increased fat deposition)

What are the Health and Physiological Changes

- **Gut Health (Leaky Gut):** Heat reduces blood flow to the digestive tract, causing inflammation, shorter intestinal villi, and increased permeability. This allows pathogens like Salmonella and E. coli to translocate into the bloodstream
- **Immune Suppression:** Atrophy of lymphoid organs (spleen, thymus, and bursa of Fabricius) reduces antibody production and white blood cell counts, making birds more susceptible to diseases like Newcastle disease
- **Acid-Base Imbalance:** Excessive panting leads to respiratory alkalosis (alkaline blood), which depletes essential electrolytes like Potassium (K+) and Sodium (Na+)
- **Oxidative Stress:** Overproduction of Reactive Oxygen Species (ROS) damages cellular proteins, lipids, and DNA

What is the Effect of Heat Stress on Broiler Production?

Heat stress significantly impairs broiler production by disrupting homeostasis, leading to reduced growth, poor meat quality, and high mortality rates. Modern fast-growing broiler strains are particularly vulnerable due to high metabolic rates and limited heat-dissipation mechanisms, such as a lack of sweat glands.

Production Performance Impacts

Heat stress forces birds to divert energy from growth to thermoregulation, resulting in:

- **Reduced Feed Intake:** Birds consume up to 16-30% less feed to minimise metabolic heat generation
- **Lower Weight Gain:** Chronic exposure can lead to a 31-51% decrease in body weight gain
- **Poorer Feed Conversion Ratio (FCR):** Efficiency drops as more feed is required for a single unit of weight gain, with FCR increasing by 23-25% in severe cases
- **Increased Mortality:** Heat-related deaths rise sharply, especially during transport or in high stocking densities

What is the Effect on Meat Quality?

Meat Quality Deterioration

Physiological changes during heat stress negatively affect the final product:

- **Pale, Soft, Exudative (PSE) Meat:** Stress causes rapid post-mortem glycolysis, leading to pale meat with poor water-holding capacity and high drip loss
- **Altered Body Composition:** Birds show increased fat deposition (adiposity) and reduced breast muscle yield due to protein breakdown for energy
- **Reduced Shelf Life:** Higher oxidative stress in tissues can accelerate the decomposition of carcasses

Production Performance in Layer Birds

Heat stress significantly compromises the production performance of layer birds, primarily by disrupting their physiological homeostasis and reducing nutrient intake. The impact is most severe when temperatures exceed 27–30°C.

Physiological and Behavioral Responses

- **Thermoregulation:** Layers lack sweat glands and must rely on panting, wing spreading, and increased water consumption to dissipate heat
- **Hormonal Shifts:** Stress triggers the release of corticosterone, which suppresses reproductive hormones (LH and FSH), directly inhibiting ovulation
- **Immune Suppression:** Heat stress regresses immune organs like the spleen and bursa, increasing susceptibility to diseases

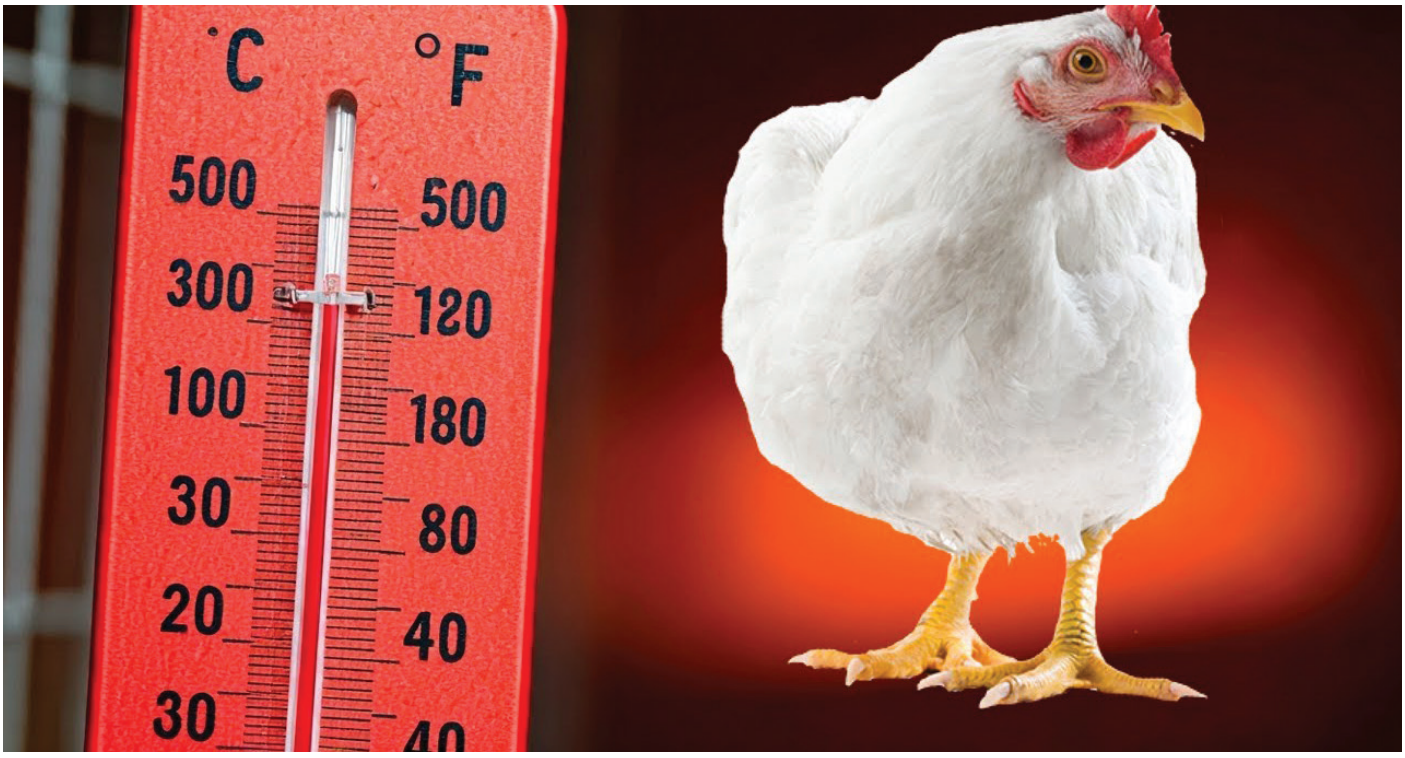
Impact on Production Metrics

- **Egg Production Rate:** Significant declines are common; studies report reductions ranging from 11% to 36.4% under severe stress
- **Egg Weight and Size:** Heat stress consistently reduces average egg weight by roughly 3.4% to 14%
- **Feed Intake:** Birds naturally consume less feed to lower metabolic heat production, with reductions of up to 30–35%
- **Feed Conversion Ratio (FCR):** Generally, worsens (increases) as birds divert energy from production to thermoregulation (e.g., panting)
- **Body Weight:** Chronic exposure can lead to significant weight loss, sometimes nearly 20% below optimal levels

Impact on Egg Quality

■ **Eggshell Quality:** Panting leads to respiratory alkalosis, which reduces blood CO2 and bicarbonate levels necessary for calcium carbonate formation. This results in:

- Thinner, weaker eggshells
- Increased rates of egg breakage and cracking



■ Internal Quality:

- Haugh Units: Often decline, indicating reduced albumen (white) freshness and quality
- Yolk Colour: May become paler due to reduced intake of pigments and oxidative stress

Mitigation of Heat Stress in Poultry

To minimise production losses in poultry during heat stress, a combination of nutritional formulations (increasing nutrients to compensate for low intake, antioxidants, and electrolytes) and housing designs (insulation, ventilation, and cooling systems) is essential. Key interventions include maintaining low stocking density, using evaporative cooling, providing cold water, reducing crude protein, and supplementing with betaine and vitamin C.

Housing Designs to Minimise Heat Stress

Housing should focus on preventing direct sun exposure, improving air circulation, and enhancing evaporation.

- **Orientation & Insulation:** Buildings should be oriented East-West to minimise direct sunlight on sidewalls. Roofs should be insulated (e.g., polyurethane foam, reflective paint, or white paint) to reduce heat gain by up to 30%
- **Ventilation Systems:** Tunnel ventilation is highly effective, as it increases air velocity to 2.5-3 meters per second, enhancing convective cooling
- **Evaporative Cooling:** Utilising cooling pads and foggers/misters can reduce ambient temperature by 7–10°C, but must be managed carefully if humidity is high
- **Roof and Ceiling Structure:** A roof slope of 45° allows hot air to rise, while a minimum 60 cm (2 ft.) overhang protects against direct sunlight. Thatching with agricultural waste (paddy straw, coconut leaves) provides good, low-cost insulation
- **Stocking Density & Floor Management:** Reduce stocking density by 20–30% (e.g., from 12 to 8–10 birds per m^2). Use proper, dry bedding (wood shavings, rice husk) to prevent heat generation
- **Cool Water System:** Ensure 24-hour access to cool water (<25°C), using shaded or buried pipelines

Nutritional Formulations & Strategies

Nutritional approaches aim to boost nutrient density to compensate for reduced feed intake (often 5% less for every 1°C rise above 32°C) and reduce metabolic heat production.

- **Electrolyte Balance (DEB):** To combat respiratory alkalosis (high blood pH from panting), it is recommended to maintain a dietary electrolyte balance ($Na^+ + K^+ - Cl^-$) of 240–250 mEq/kg. Supplementing water with potassium chloride (0.6%), sodium bicarbonate, or ammonium chloride is crucial
- **Betaine Supplementation:** Betaine (1g/kg) is highly effective as an osmoregulator, helping cells retain water, maintaining gut health, and improving breast meat yield
- **Vitamin Supplements:** Increased levels of Vitamins C (250-500 mg/kg), E (125-250 mg/kg), and A are required to act as antioxidants and reduce mortality
- **Protein & Energy Adjustments:** Reduce total crude protein by 0.5–1% to lower the heat increment of feeding, while supplementing with synthetic amino acids (methionine, lysine). Increase energy density by 100-150 kcal/kg using fat/oil (up to 5%) to provide necessary calories without the high heat increment of carbohydrates
- **Feed Management:** Feed birds during the cooler parts of the day (early morning/late evening). Removing feed 6–8 hours before anticipated peak temperatures can reduce mortality
- **Phytogenics/Herbs:** Incorporating herbal additives like turmeric (0.3–0.6 g/kg) or ginger can improve digestion and stimulate the immune system

Conclusion

Heat stress in poultry, caused by high ambient temperatures and humidity, causes severe issues like reduced feed intake, high mortality, and poor growth/egg production. Key mitigation strategies include optimsing house ventilation and cooling, implementing nutrient-dense diets (higher fat, lower protein), ensuring cool water availability, and using genetic breeding for heat tolerance.

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BEST ACHIEVERS
FEBRUARY-2026

Aviagen INDIA

Northern Region

COMPANY: IB Group
FARMER NAME: Mr. Achhe Lal

FEBRUARY-2026	Top #1
Farm Type	Open House
State	UTTAR PRADESH
Chicks Placed	3183
Mean Age	40.0
Avg Body Wt	3269
FCR	1.450
cFCR	1.168
Livability%	92.4
Daily Gain	81.7
EPEF	521.0

Eastern Region

COMPANY: IB Group
FARMER NAME: Mr. Ramanand Hait

FEBRUARY-2026	Top #1
Farm Type	Open House
State	BIHAR
Chicks Placed	2232
Mean Age	41.0
Avg Body Wt	3118
FCR	1.416
cFCR	1.168
Livability%	94.4
Daily Gain	76.0
EPEF	506.7

Central Region

COMPANY: IB Group
FARMER NAME: Mr. Arun Chandrakar

FEBRUARY-2026	Top #1
Farm Type	Open House
State	CHHATTISGARH
Chicks Placed	3108
Mean Age	35.0
Avg Body Wt	2504
FCR	1.286
cFCR	1.174
Livability%	94.7
Daily Gain	71.5
EPEF	526.9

South Region

COMPANY: IB Group
FARMER NAME: Mr. Yerragonda Parsharam Reddy

FEBRUARY-2026	Top #1
Farm Type	Open House
State	TELANGANA
Chicks Placed	6150
Mean Age	35.0
Avg Body Wt	2449.0
FCR	1.329
cFCR	1.229
Livability%	89.6
Daily Gain	70.0
EPEF	472.0

FEBRUARY-Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North EC House	14940	36.0	2720	1.436	1.276	95.5	75.6	502.5
North Open House	6150	35.0	2449	1.329	1.229	89.6	70.0	472.0
East EC House	19768	42.0	2870	1.440	1.247	90.6	68.3	430.0
East Open House	2232	41.0	3118	1.416	1.168	94.4	76.0	506.7
Central EC House	7963	45.0	3786	1.576	1.179	88.6	84.1	473.1
Central Open House	3108	35.0	2504	1.286	1.174	94.7	71.5	526.9
South EC House	14940	36.0	2720	1.436	1.276	95.5	75.6	502.5
South Open House	6150	35.0	2449	1.329	1.229	89.6	70.0	472.0

FEBRUARY-Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	OPEN HOUSE	BIHAR	2232	41.0	3118	1.416	1.168	94.4	76.0	506.7
Flock 2	OPEN HOUSE	UTTAR PRADESH	3183	40.0	3269	1.450	1.168	92.4	81.7	521.0
Flock 3	OPEN HOUSE	PUNJAB	5993	42.0	3415	1.488	1.174	93.6	81.3	511.4
Flock 4	OPEN HOUSE	CHHATTISGARH	3108	35.0	2504	1.286	1.174	94.7	71.5	526.9
Flock 5	EC HOUSE	MAHARASHTRA	7963	45.0	3786	1.576	1.179	88.6	84.1	473.1
Flock 6	OPEN HOUSE	UTTARAKHAND	4280	44.0	3390	1.496	1.187	95.9	77.0	493.9
Flock 7	EC HOUSE	HARYANA	8784	45.0	3513	1.528	1.192	96.7	78.1	494.0
Flock 8	OPEN HOUSE	UTTAR PRADESH	4391	41.0	3301	1.483	1.194	92.7	80.5	503.3
Flock 9	OPEN HOUSE	RAJASTHAN	6788	45.0	3658	1.564	1.196	95.3	81.3	495.4
Flock 10	OPENHOUSE	UTTAR PRADESH	2478	41.0	3291	1.486	1.199	92.1	80.3	497.4

Article

Transition in Poultry Stress Management: From Traditional Remedies to Chromium-Based Solutions

Midhun Raj Gustav Vengra
Kemin Industries South Asia Pvt. Ltd.

Introduction

Stress management in poultry has long relied on conventional practices, such as vitamin C supplementation, electrolyte supplementation, and environmental modifications, to address challenges like heat stress. While these methods have provided relief, the evolving realities of modern poultry farming, marked by complex stressors including disease pressure, oxidative damage, nutritional imbalances, and environmental fluctuations, demand a more comprehensive approach. A significant transition in this field is the adoption of chromium supplementation, either independently or in synergy with vitamin C, to address stress at its root cause.

The Impact of Heat Stress

Heat stress remains one of the most critical challenges in poultry production. Elevated temperatures trigger physiological changes such as:

- Reduced feed intake and growth rate
- Decline in eggshell quality and egg production
- Increased mortality
- Elevated blood corticosterone levels

These changes compromise immunity, impair glucose uptake due to insulin insensitivity, and accelerate muscle breakdown through gluconeogenesis. The result is a cascade of metabolic dysfunctions that traditional remedies alone cannot fully correct.

Why A Modern Approach is Necessary for "Root-Cause" Solutions?

Traditional strategies—electrolytes, vitamin C, and ventilation—remain essential but insufficient. Today's poultry industry faces multifactorial stressors:

1. **Increased Metabolic Demands:** Modern broilers and layers have higher metabolic rates, leading to oxidative stress
2. **Environmental Challenges:** Overcrowding, ammonia buildup, and fluctuating temperatures intensify stress
3. **Disease Pressure:** Antibiotic resistance and emerging pathogens compromise immunity
4. **Market Demands:** Producers must balance productivity with biosecurity, nutritional consistency, and raw material challenges.

These realities necessitate a shift from isolated solutions to integrated, root-cause interventions.

Chromium: The Cornerstone of Modern Stress Management

Chromium, a vital trace mineral, enhances insulin action and regulates glucose metabolism. Under stress, corticosterone levels rise, leading to hyperglycemia and inefficient glucose utilisation. Chromium supplementation improves insulin sensitivity, stabilises blood glucose, and reduces oxidative stress by boosting antioxidant enzyme activity. Figure 1 illustrates the role of chromium in enhancing insulin action and glucose uptake at the cellular level.

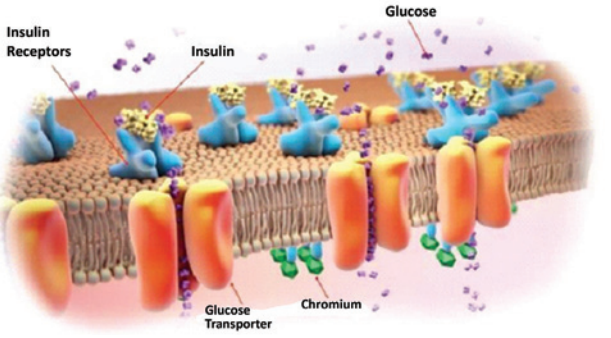

Fig.1: Role of Chromium in Enhancing Insulin Action and Glucose Uptake (IMG-KAI-01032)

Key Research Highlights:

- Chromium is essential for carbohydrate, fat, and protein metabolism (Anderson, 1987)
- As part of the Glucose Tolerance Factor (Mertz, 1993), chromium potentiates insulin action
- Organic chromium supplementation reduces heterophil-to-lymphocyte ratios, a stress marker, in heat-stressed chicks (Bahrami et al., 2012)
- Serum IgG levels improve with chromium supplementation, enhancing immunity (Toghyani et al., 2007)

Chromium Propionate: Addressing the Root Cause

Chromium propionate, a biologically active form of trivalent chromium, directly counters stress by:

- Reducing Corticosterone Levels
- Enhancing insulin action
- Accelerating glucose clearance
- Improving energy availability, feed intake, and immunity

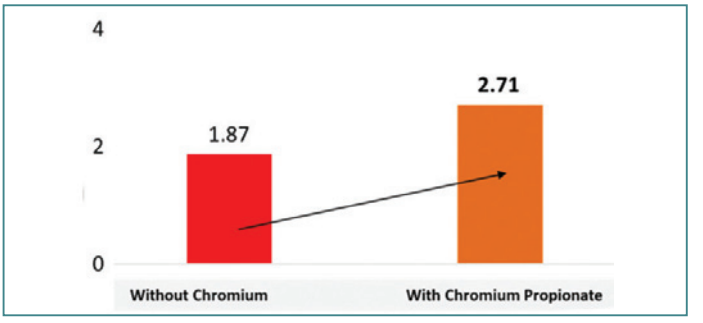

Fig. 2: Blood Glucose Clearance (% per min.) (SPRE-23-20885)

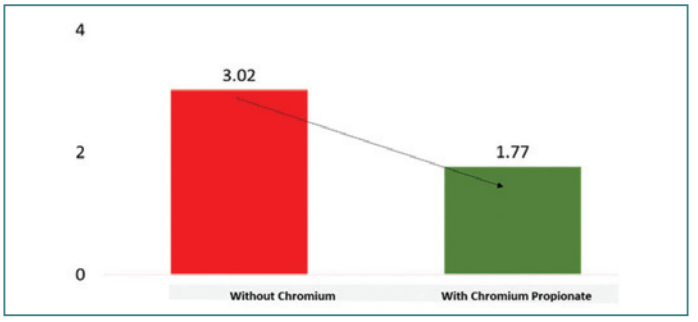

Fig. 3: Blood corticosterone (ng/ml) (SPRE-22-2008)

Field data shows up to 40% reduction in corticosterone (Fig. 3) and 45% faster glucose clearance (Fig. 2), directly targeting the metabolic dysfunction behind summer stress.

Why Vitamin C Alone Falls Short?

Vitamin C neutralises free radicals and supports adrenal function, but it cannot correct:

- Corticosterone surges
- Insulin dysfunction
- Impaired glucose uptake

Thus, despite higher inclusion rates, vitamin C alone cannot fully restore performance under heat stress.

How does the combination of Chromium + Vit C act synergistically?

Supplementation through feed with Cr + Vit. C demonstrates a positive metabolic shift in birds under stress conditions (Fig. 4). The combination helps maintain stable insulin levels, supports

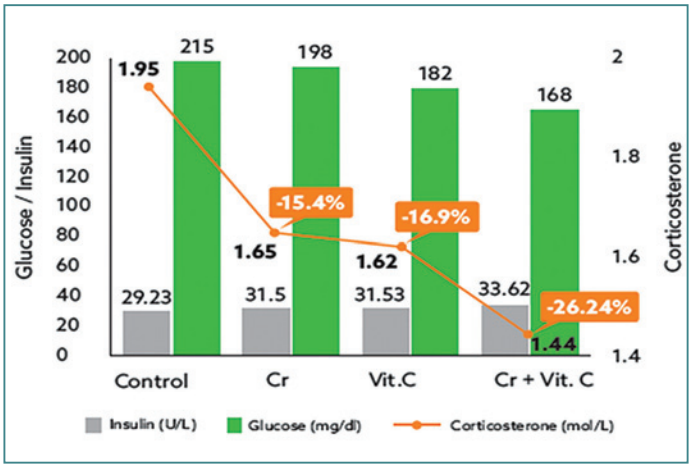

Fig. 4: Effect of chromium and vitamin C on blood glucose, insulin, and corticosterone (Sahin et al., 2003)

improved glucose utilisation (with a reduction in circulating glucose compared to the control), and significantly lowers corticosterone levels (around a 26% reduction vs. the control) (Sahin et al., 2003).

The role of Vitamin E in Poultry

Vitamin E plays a crucial role in summer management of poultry by acting as a powerful antioxidant that protects cells from heat-induced oxidative stress. Its supplementation supports immunity and helps maintain performance and egg production during high ambient temperatures.

Why Combine Chromium with Vitamin C and Vitamin E?

While chromium addresses metabolic stress and oxidative damage, vitamins C and E enhance the bird's ability to cope with environmental and thermal challenges. The combination provides a synergistic effect, offering comprehensive stress management by:

1. Reducing Corticosterone Levels
2. Improving Glucose Metabolism
3. Strengthening Immune Function
4. Enhancing Antioxidant Capacity
5. Supporting Thermotolerance
6. Promoting Muscle Integrity

A Modern Stress Management Approach

The poultry industry stands at a crossroads. Traditional stress management methods, while valuable, are no longer sufficient to meet modern challenges. Transitioning to chromium enriched with vitamins C and E represents this paradigm shift, improving endurance and immunity by addressing stress at its root cause. This marks the beginning of a new era in poultry stress management, where chromium emerges as a cornerstone of holistic farm practices.

It helps counter stress and elevate performance by:

1. Stress Mitigation

- Controls corticosterone surges
- Enhances insulin sensitivity
- Regulates glucose metabolism
- Strengthens cell membranes

Chromium propionate helps prevent corticosterone surges and improves glucose uptake by cells.

2. Immune strengthening

- Neutralises free radicals
- Boosts antioxidant defense
- Shields cell membranes from oxidative stress

Vitamins C & E synergistically support antioxidant activity.

3. Performance Optimisation

- Enhances energy metabolism
- Prevents muscle loss
- Improves feed efficiency for growth and productivity

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KFC Commits to 35% British-Sourced Chicken by 2026 with £100m Investment

Fast food company, KFC, has committed to sourcing more British poultry as part of a £10 million investment into the sector, bringing its total spend to almost £100 million.

By the end of 2026, 35% of KFC UK and Ireland chicken will be sourced from British farms, which will see the firm adding chicken wings to the list of products it will now source from British farms, following an expansion of its long-standing partnership with 2 Sisters Food Group.

NFU Poultry Board Chair, Will Raw welcomed KFC's commitment to sourcing British poultry: "It's always welcome to see retailers and food businesses championing British produce. UK poultry farmers are proud to produce to high standards which the British public rightly values, and long-term sourcing commitments from retailers are essential to ensuring producers and the supply chain have the confidence to invest in the businesses that deliver growth for both the food sector and wider economy."

"The work that our British partners 2 Sisters Food Group and Pilgrim's Europe have been doing to drive up chicken welfare against this backdrop is significant. We are proud that all our British chicken is now being reared at 30kg/m² stocking density."

Sourcing British chicken wings will increase the amount of British chicken on KFC's menu to the equivalent of 82,700 MT of chicken annually, with only boneless chicken now sourced from other markets.

Marc Hayes, Yum! Chief Supply Chain Officer Europe, said: "This is a tough time for the poultry sector across Europe, with avian flu outbreaks pressuring supply, at a time of higher demand. Long-term sourcing commitments from retailers are essential to ensuring producers and the supply chain have the confidence to invest.

Through its partnerships with 2 Sisters Food Group and other British supplier Pilgrim's Europe, KFC said it will continue collaborating to "drive up welfare standards across the chicken industry" while balancing the reduction of the environmental impact of chicken farming.

Ranjit Singh, President of 2 Sisters Food Group: "Our long-standing partnership with KFC is founded on close collaboration and a shared dedication to high welfare standards and this increased commitment to British farming represents a positive and important investment in the future of UK agriculture. The move ensures British farmers are supported to produce high-quality poultry that meets the expectations of both consumers and robust welfare standards."

Aviagen to Invest US$40 Million in Poultry Genetics Hub in Uzbekistan

Aviagen is planning to invest US$40 million in a new poultry breeding cluster in Uzbekistan. The US poultry genetics company aims to strengthen the country's domestic poultry supply and reduce reliance on imported breeding stock.

The project, to be implemented by Aviagen's global breeding division, will establish a modern poultry genetics and production complex designed to support the development of Uzbekistan's rapidly expanding poultry sector, according to a statement.

INTERNATIONAL

The cluster is expected to include breeding farms, hatchery facilities, and supporting infrastructure built according to international biosecurity and production standards.

Once operational, the facility is projected to reach an annual capacity of around 4.5 million birds, supplying high-quality breeding stock to local poultry producers. Industry officials say the initiative will help improve flock productivity, strengthen supply chains, and support the country's efforts to boost domestic poultry meat production.

During the recent meeting with farmers, Uzbek President Shavkat Mirzioyev announced that the government will extend subsidies to poultry farmers for the purchase of day-old chicks for another 5 years.

Uzbekistan introduces direct subsidies for poultry farms importing day-old pedigree chicks starting from 1st July 2022. Under the scheme, farms received UZS 12,000 (US$1) per imported chick to offset the cost of purchasing breeding stock from abroad. The measure initially covered the period from 1st July 2022 to 1st January 2024, but has already been extended once, since it reportedly proved its effectiveness in bolstering local production.

The new project has been backed by local authorities and is a part of Uzbekistan's comprehensive strategy aimed at enhancing food security, including through co-operation with global agribusiness companies.

In 2025, Uzbekistan imported 64,900 tonnes of poultry, a slight increase compared to 61,100 tonnes in 2024, according to official government data.

Uzbekistan has made food security a central policy priority, aiming to ensure stable supplies of key food products for its rapidly growing population and to reduce reliance on imports.

Uzbekistan faces a surge in prices on the poultry and meat markets in 2025. As a result, Mirzioyev called on the government to double down on its efforts to expand food production, warning that the industry is "in crisis".

IPR Espresso

Maharashtra Plans State-Owned Egg Brand to Cut Imports and Boost Farmer Incomes

The Animal Husbandry Department, Government of Maharashtra is considering developing its own egg brand to strengthen egg production and boost the income of poultry farmers in the state, confirmed Animal Husbandry Minister Pankaja Munde, recently.

Maharashtra imports around 15 million eggs per day – nearly 50% of its daily egg requirement – from Southern states, and the Animal Husbandry Department will encourage poultry farmers in the state to close the gap by providing 50-75% subsidy.

"While encouraging entrepreneurship in rural areas for poultry business development, we should develop the state's own egg brand, similar to how we developed milk brands like Aarey and Mahanand," said Munde while chairing a meeting on implementation of the 'Mukhyamantri Gramin Pashudhan Udyojakata Yojana'. According to data from the Animal Husbandry Department, Maharashtra has around 74.2 million poultry birds and 1.4 million families depend on the poultry business for their livelihood. Parts of North Maharashtra such as Nandurbar, Dhule and Nashik and districts like Amaravati and Sangli contribute a major chunk of chicken and eggs consumed in the state.

"Maharashtra needs around 30 million eggs per day but due to shortage of supply around 15 million eggs are imported from states like Telangana and Andhra Pradesh. Under the 'Mukhyamantri Gramin Pashudhan Udyojakata Yojana', poultry business and egg production would be encouraged at two levels, officials said. District Planning and Development Committees would provide one-time financial help of Rs. 1.66 lakh to people who want to set up poultry business with up to 500 birds, the amount being 50% of the Rs. 3.32-lakh project cost fixed by the state. Applicants from Scheduled Caste (SC) and Scheduled Tribe (ST) categories would be provided 75% subsidy, officials said.

To set up poultry business on a large scale with 5,000 birds, the government will give a subsidy of Rs. 15 lakh, or 50% of the project cost of Rs. 30 lakh. Applicants from SC and ST categories would get 75% subsidy, or Rs. 22.50 lakh.

UP Govt Shelves Egg Expiry Labelling Mandate, Citing Supply Worries and Price Pressure

Uttar Pradesh has put on hold the mandate that all eggs sold in the state must carry an expiry date, similar to the labelling required for packaged medicines.

The Uttar Pradesh government decided earlier that starting 1st April, eggs sold in the state should mandatorily display an expiry date.This followed a state government directive requiring producers to stamp expiry dates on all eggs. Stocks that do not comply would be destroyed or deemed unfit for sale. Though, unlike medicines, the expiry date on eggs would indicate peak freshness rather than a strict safety limit. However, the government has now put on hold the implementation, citing concerns over a potential supply disruption and a sharp rise in the prices of eggs.

NATIONAL

Officials from the Food Safety and Drug Administration warned that enforcing the rule immediately could trigger a shortage, since a large share of eggs consumed in the state is sourced from outside and does not carry production or expiry date markings. Officials also indicated logistical hurdles in enforcing the rule. Eggs would have to be stamped with production and expiry dates right after being laid, complicating sorting, storage, and distribution processes. Differences in storage conditions add to the challenge, as eggs last longer when refrigerated than at room temperature. The government is now planning to consult major supplier states before making a final decision on the matter.

The decision has, however, drawn criticism from industry representatives also. V.P. Singh, President of the Uttar Pradesh Poultry Development Committee, alleged that the delay is the result of pressure from large traders. He added that the state should have coordinated with supplier states to ensure compliance with the rule introduced by the Centre in February 2023. Uttar Pradesh consumes roughly 3.35 crore eggs each day, while local production is about 1.80 crore.The shortfall of around 1.55 crore eggs is met by supplies from states like Haryana, Punjab, Telangana, Andhra Pradesh, and Tamil Nadu.

Eggs sourced from these states are generally stamped only for export purposes, not for domestic sale.

Relief for Consumers as Chicken Prices Crash in AP Amid Telangana Strike

In a sudden and dramatic turnaround, chicken prices across Andhra Pradesh have plunged after weeks of steady rise, bringing much-needed relief to consumers. The sharp decline is being linked to the ongoing chicken shop strike in neighbouring Telangana, which has disrupted supply chains and altered market demand.

Just days ago, on 30th March, broiler chicken was selling at a steep Rs. 405 per kg. Within a short span, prices have dropped significantly to Rs. 260 per kg. Market experts say the fall has been triggered by excess supply being diverted into Andhra Pradesh due to reduced sales in Telangana.

Poultry traders indicate that the trend may continue if the strike persists. "There is a sudden glut in the market. Supply has increased while demand remains steady. If this continues, prices could fall further to Rs. 180 per kg," said Kaku Ramana Yadav, a chicken trader from Vijayawada. Chicken farmers, however, are worried about mounting losses. "We were just recovering from previous setbacks, and now this price crash is a big blow. Feed costs remain high, but market rates have dropped drastically," said J Raja Babu, a poultry farmer from Aagiripalli.

Consumers, on the other hand, are welcoming the price drop. "Chicken had become too expensive over the past month. This sudden fall is a relief for families like ours," said M Anusha, a customer at a local market. With uncertainty looming over how long the Telangana strike will continue, both traders and farmers are closely watching the situation, as it continues to directly impact prices and livelihoods in the poultry sector.

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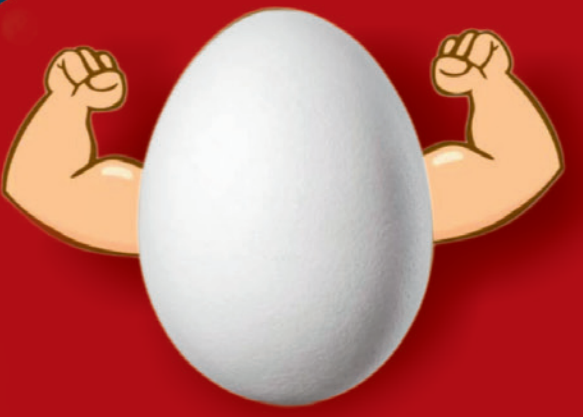

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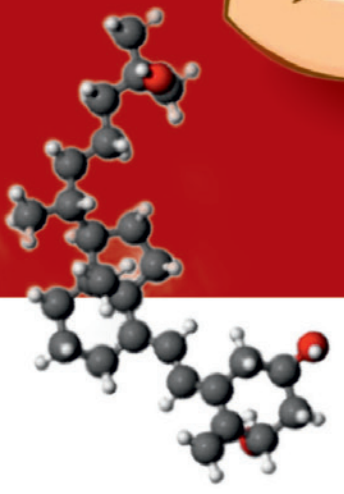

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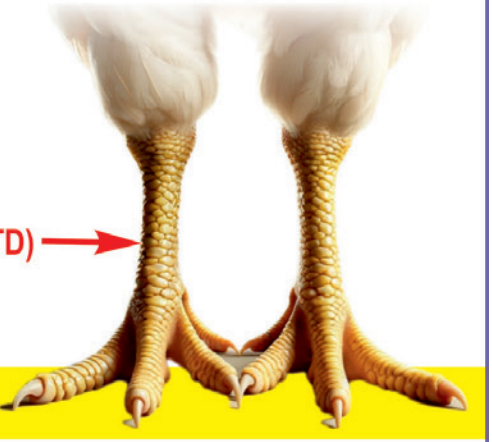

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Optima Life Sciences Brings Experts Together at Rajahmundry

Optima Life Sciences recently hosted a scientific conclave in Rajahmundry, bringing together poultry industry stakeholders to discuss the importance of intestinal health in improving layer productivity. The event highlighted Optima's research-driven approach and advanced capabilities, setting the stage for knowledge sharing.

Dr. C. V. Chandrasekaran, Vice President-Business Development welcomed the attendees.

The key session by Dr. U. C. Patel focused on the evolving nature of gut health across the layer lifecycle and emphasised three core pillars—microbiota, gut integrity, and immunity—as critical drivers of performance. He also underscored the role of probiotics and tributyrins in supporting nutrient absorption and gut resilience.

The conclave concluded with the introduction of ButyEster Pro 3 by Dr. Kalyani Sarode, a solution designed to enhance gut function and support peak production. The event saw strong engagement, reflecting the industry's growing focus on gut health as a cornerstone of productivity and profitability.

Shaping the Future of Layer Farming: IPR Knowledge Review Ignites Dialogue in Tripura

On a promising 11th April morning in Agartala, a sense of purpose and possibility filled the room as industry leaders, experts, and farmers came together for the IPR Knowledge Review seminar. Organised in collaboration with the Tripura Poultry Development Forum, the gathering marked more than just another industry event, it was a collective step toward shaping the future of layer poultry in the region.

United by a shared vision to strengthen and advance the sector, participants assembled with enthusiasm and intent. At the heart of the seminar was a theme both timely and significant: "Integrated Approaches for Sustainable Layer Farming in Tripura." As the demand for safe, nutritious, and affordable protein continues to rise, the spotlight on layer farming has never been more critical—offering not just economic opportunity, but also a pathway to nutritional security for the state.

Set against Tripura's unique geographical and socio-economic backdrop, the seminar aimed to unlock the region's untapped potential and inspire a more resilient, self-reliant poultry ecosystem. Through dialogue, knowledge exchange, and collaboration, the platform set the tone for meaningful conversations, bringing together insights, innovation, and practical solutions tailored to local realities.

In his Guest of Honour's address, Uday Singh Bayas, President, IPEMA-Poultry India spoke about how Poultry India has emerged as the largest poultry specific expo in the world and how this expo is not only attracting visitors from across the region but also from other parts of the world. While speaking about the success of the 17th edition, he extended a warm invitation to the seminar delegates to attend the 18th edition of Poultry India scheduled ay Hyderabad between 25th and 27th November 2026. His presence reinforced IPEMA-Poultry India's commitment to knowledge sharing, industry collaboration and regional development of the poultry sector.

Madan Mohan Maity, General Secretary, West Bengal Poultry Federation, in his Guest of Honour's presentation highlighted the growing importance of sustainable layer farming in Tripura within the broader context of India's expanding poultry sector. He said that with national egg production reaching 36–38 crore eggs daily and projected to nearly double under the Viksit Bharat 2047 vision, the demand-supply gap, especially in regions like Tripura, presents a strong opportunity for organised poultry development. Despite rising nutritional awareness, India's per capita egg consumption remains below recommended levels, underscoring the need for increased production. Tripura, with its strategic location and unmet regional demand, is well-positioned to develop a robust layer farming ecosystem, he added. In his presentation Mr. Maity outlined key prerequisites for success,

including suitable land selection, infrastructure, skilled manpower, reliable electricity and water supply, and strong veterinary support. Efficient marketing systems and access to quality chicks and feed are equally critical to ensure productivity and profitability. He further said that Financial planning and access to government support further strengthen viability. Mr. Maity concluded by saying that with scientific management and integrated practices, layer farming in Tripura can emerge as a sustainable, profitable, and employment-generating sector.

Speakers who graced the seminar included:

Dr. Bikash Chandra Debnath Associate Professor, College of Veterinary Sciences & Animal Husbandry, Agartala	Region-Specific Strategies for Commercial Layer Expansion in Tripura
Dr. Vidyasagar Punja General Manager, VH Group	Strategies for Optimum Productivity in Commercial Layers
Dr. Damodar Pattath Veterinary Health & Husbandry Specialist	Strengthening Biosecurity & Disease Surveillance in Layer Farms
Mr. Prashant Kumar Co-founder & Director Sapience Group	Digital Monitoring & Data-Driven Farm Management
Dr. Santosh Ire Director - Bhuvana NBS, Secretary - Vets in Poultry & Marketing Consultant - Yaashvan Veterinary Services	Water Health – A Pillar of Sustainable Poultry Farming

Ajoy Chakraborty of Tripura Poultry Development Forum delivered the closing address and vote of thanks.

With an impressive line-up of experts and an engaged audience, the seminar promised not just ideas, but action - laying the groundwork for a stronger and more sustainable future for layer poultry farming in Tripura.


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BBAN Organises AGM at Jim Corbett National Park

The Annual General Meeting (AGM) of the Broiler Breeders Association of North India (BBAN) was held on 27th and 28th February 2026 at Jim Corbett National Park, bringing together leading breeder farmers, poultry experts, and key stakeholders from across the region. The two-day gathering served as a vital forum to assess industry realities and chart a forward-looking roadmap for the broiler breeding sector.

Discussions centred on pressing challenges including rising feed costs, disease management, biosecurity gaps, breeder performance, and hatchability. Members emphasised the need for scientific interventions and improved farm management practices to enhance productivity and ensure long-term sustainability. Expert-led sessions highlighted advancements in breeder genetics, efficient feed utilisation, and modern management systems aimed at improving overall operational efficiency.

A key concern raised during the AGM was the volatility in raw material prices, particularly maize and soybean meal, and its impact on production economics. Participants collectively called for stronger policy support, enhanced research collaboration, and proactive government engagement to stabilise the sector and protect breeder interests.

The meeting also explored market dynamics, supply-demand balance, and the critical role breeder farmers play in sustaining a resilient broiler supply chain. Interactive exchanges allowed members to share practical insights and on-ground solutions to common challenges.

Beyond technical deliberations, the AGM fostered meaningful networking and collaboration among breeders, hatchery operators, nutritionists, and allied partners. The association reaffirmed its commitment to advancing scientific breeding practices and working closely with stakeholders to drive sustainable growth.






Optima's Annual Sales Summit Sets the Tone for the Year Ahead

Optima Life Sciences launched its three-day Annual Sales Acceleration Summit with a high-impact Townhall on the first day, bringing together cross-functional teams, leadership, and frontline stakeholders. The Townhall served as a unified platform to integrate insights across sales, marketing, technical, and operations teams - enhancing clarity on strategic priorities and reinforcing a cohesive growth roadmap in an increasingly competitive global landscape.

Moments that Shaped the Narrative:

- **Unified Strategic Direction:** Leadership outlined a clear roadmap focused on expansion, innovation, and long-term value creation
- **From Insight to Impact:** Immersive exposure to the manufacturing platform and CARE facility (Center for Animal Research and Excellence) offered sales team a first-hand understanding of product science, quality systems, and research rigor-transforming knowledge into conviction
- **Sharpening the Edge of Execution:** Portfolio deep-dives strengthened positioning, differentiation, and customer engagement strategies
- **Mastering Crucial Conversations:** Teams were equipped to handle high-stakes interactions with precision and assurance
- **Culture of Collaboration:** Strong cross-functional participation

reinforced a unified, performance-driven organisation

Highlighting the organisation's forward momentum, Vinay Kulkarni, Executive Chairman said, "These three days symbolise the way we envision growth-not as isolated efforts, but as a continuum of alignment, capability-building and decisive execution. Our strategic roadmap is driven by purposeful expansion, calibrated acquisitions and a deep commitment to innovation. As we look ahead, it is this integrated strength of our teams that will enable us to scale with clarity and confidence".

According to Dr. Arindam Chatterjee, Vice President – Strategy, Marketing & Technology, "In today's landscape, differentiation is no longer optional-it is essential. The next phase of growth will not be driven by products alone, but by how intelligently we position them in the market. Our focus is to move from transactional selling to insight-led engagement-where we solve problems, shape customer thinking, and create long-term value. This requires a sharper integration of science, strategy, and storytelling."

Dr. C. V. Chandrasekaran, Vice President–Business Development reflected, "In the end, strategy finds its meaning in execution. Our focus is on equipping our teams with the clarity, confidence, and capability to handle every customer interaction—especially the most crucial ones—with precision and impact."

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Glamac Wraps up Annual Meet 2025-26

Glamac International organised its Annual Meeting from 9th to 12th April at Munnar, Kerala with the company's senior leadership, sales and operations teams, and technical experts from India, Nepal, and Bangladesh.

The meeting included in-depth reviews of business performance, strategic priorities, and upcoming innovations. The key highlight was the "Way Forward 2026-27" address by Managing Director, Abir Mukherjee, outlining the company's growth roadmap. This was complemented by a session on international expansion led by Shobit Kumar Sahu, International Business Manager.

A major point of engagement was the presentation of VAP, a recently launched product developed in collaboration with SenMu, Taiwan for viral defence, introduced by Dr. Sumon Nag Chowdhury, AGM – Technical & Marketing. The proceedings also included a highly interactive sales orientation workshop conducted by Guest of Honour, Dinesh Kumar Singh, Corporate Trainer, Farmall Nutriconnect LLP.

Key business sessions included the Sales Review 2025-26 by Dr. Manish Chaurasia, AGM- Sales & Marketing and Dr. Sumon Nag Chowdhury, followed by the Budget 2026-27 presentation led by Sujit Jadhav, Sr. Manager – Finance & Operations.

The annual awards ceremony honoured outstanding contributions across the organisation.

Major awards include:

Long Service Award	Rohit Gulati & Prashant Jangam
Glamac Superstar Award FY 2025–26	Navnath Bankar, Area Manager – Pune
Crowning Achievement Award FY 2025–26	Sushil Aryal- Nepal & Rohit Gulati - Chandigarh
MD Award FY 2025–26	Sujit Jadhav – Senior Manager – Finance & Operations
Top Performer Award FY 2025–26	Dr. Sumon Nag Chowdhury – AGM & Satish Nikam, Dy. Manager – Finance & Accounts
Management Award for Commitment & Sincerity	Dr. Rajesh Reddy, Product Manager and Dr. Manish Chaurasia, AGM

With a strengthened leadership team and a clear focus on expanding its international footprint, Glamac aims to achieve Rs.100 crore turnover within the next three years.

"Our Annual Meeting is a testament to our commitment to innovation, collaboration, and excellence. As we move forward into FY 2026-2027, we remain focused on innovative products, delivering exceptional solutions and fostering global partnerships & sourcing", said Abir Mukherjee.

ICFA Leads National Push to Position Protein Security as a Policy Priority

India's poultry sector is increasingly at the centre of a critical national conversation; one that extends beyond food systems into the broader domains of public health and nutrition. This initiative, led by the Indian Chamber of Food and Agriculture (ICFA), New Delhi under the stewardship of Dr. Tarun Shridhar, Director General, ICFA and former Secretary, Department of Animal Husbandry and Dairying, reflects a growing consensus: protein security must now be elevated to a national priority. Through sustained multi-stakeholder engagement, ICFA continues to contribute meaningfully to the vision of Viksit Bharat.

At a recent roundtable convened by ICFA and chaired by Dr. P. K. Shukla, former Joint Commissioner (Poultry), Government of India, stakeholders from across the value chain came together to deliberate on how poultry, particularly eggs, can play a more decisive role in bridging India's persistent protein gap.

A key takeaway from the discussions was that India's challenge is no longer limited to food security, but extends to nutritional adequacy. While cereals have historically dominated both diets and policy frameworks, protein intake remains insufficient for a large segment of the population. Eggs, rich in high-quality protein, essential amino acids, and vital micronutrients, offer a practical and scalable solution. Yet, paradoxically, consumption has not kept pace with production.

Participants highlighted a fundamental disconnect between availability and awareness. While the sector has made significant strides in increasing output, far less attention has been paid to educating consumers about protein requirements and the nutritional value of poultry products. Misconceptions persist, particularly around antibiotics and cholesterol, despite strong scientific evidence dispelling such concerns.

One of the more nuanced discussions centred on the perception of eggs across different sections of society. Are eggs vegetarian? The question continues to challenge deeply held beliefs. Interestingly, this debate is not new. As far back as 1954, Mahatma Gandhi observed, "Eggs are regarded by the layman as flesh food. In reality, they are not." Decades later, this perspective remains relevant in a country where food choices are shaped as much by perception as by science. Reframing eggs and positioning them closer to milk in everyday acceptability could quietly but significantly expand their inclusion in diets.

Yet, even as nutritionists and policymakers emphasise the health benefits of eggs, it is perhaps a far more immediate and persuasive factor—taste that holds the key to wider acceptance. As Dr. Shridhar notes, food choices are rarely driven by information

alone; they are equally influenced by flavour, familiarity, and the pleasure of eating. Eggs, with their remarkable versatility, offer an expansive canvas for culinary innovation—from street-side favourites like anda ghotala and spicy bhurji to refined global preparations. Positioning eggs not merely as a "healthy" option, but as an indulgent, exciting, and adaptable ingredient, could meaningfully shift consumption patterns. In many ways, the pathway to improving protein intake may lie less in persuasion and more on the plate—where innovation, regional diversity, and evolving food experiences can make eggs both desirable and indispensable.

Beyond perception, structural challenges within the value chain also came into sharp focus. The absence of standardised grading and certification systems, gaps in cold chain infrastructure, and limited traceability continue to hinder consumer trust and consistent quality delivery. At the same time, the role of backyard poultry and smallholder systems, particularly in supporting rural livelihoods and enhancing women's economic participation, was highlighted as an area requiring stronger policy and institutional support.

There was also a strong call to integrate eggs more consistently into public nutrition programmes, including mid-day meals, alongside a renewed push for behaviour change campaigns targeting youth and urban consumers.

Nanovet Nutrition and International Innovation Nutrition Enter into Global Partnership

Nanovet Nutrition Pvt. Ltd. recently entered into a strategic partnership with International Innovation Nutrition (IIN), Singapore to jointly launch ACTYMUEN, a next-generation immunomodulatory solution designed to strengthen gut integrity, enhance both cellular and gut immunity, and provide antioxidant protection. By modulating innate and adaptive immune responses, ACTYMUEN improves disease resistance and supports physiological balance under stress.

Focusing on optimising the gut-immune interface, ACTYMUEN contributes to better flock uniformity, productivity, and overall sustainability in poultry systems.

Nanovet Nutrition is a science-driven company focused on delivering innovative and performance-oriented nutritional solutions while IIN is known for its advanced feed additives that enhance gut health, immunity, and resilience in intensive poultry production systems.

The collaboration combines Nanovet's on-ground insights with IIN's global expertise in nutritional innovation, enabling the delivery of targeted, effective, and sustainable solutions for modern animal production.

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