POULTRY TECHNOLOGY

A COMPLETE BUSINESS MAGAZINE FOR POULTRY INDUSTRY- CIRCULATED WORLDWIDE

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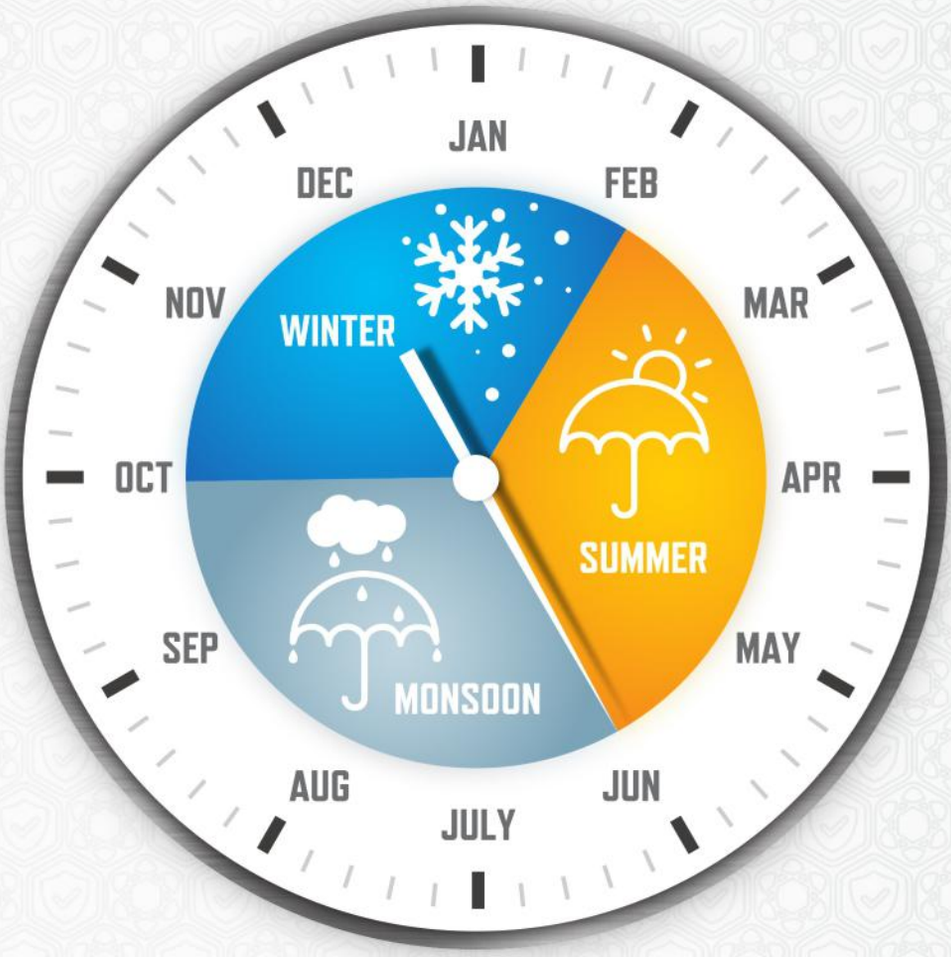

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From the Editor's Desk

The President's Chakravyuh!

Of course, it is unfair to compare Abhimanyu with Trump. Abhimanyu was the greatest warrior of strength, Valor, intelligence, and wisdom. Despite these qualities, he fell into the trap of Chakravyuh. President Trump, on the contrary, is no comparison to Abhimanyu, but with his illusory might and strength, he fell into the escalation trap and is now stuck in this modern Chakravyuh. America's military strength lies in short and intense war with stunning destruction. If America is dragged into a long, drawn-out battle, like in Vietnam and Afghanistan, it fizzles out sheepishly. The enemies of America are very well aware of this, and are using the same strategy to prolong, escalate and expand the war theatre. America's clearly fallen for this trap.

America, in its regular briefing, has decimated Iran and conquered it. Iran, on the other hand, has destroyed more than 9MQ reaper drones, and several American bases have been heavily bombed in the entire Gulf. Abraham Lincoln, the carrier, has been attacked by a few F-16 and F-35 downed, hundreds of sailors lost, Dubai airport, water desalination plants, oilfields, and several airstrips bombed. Israel continues to be showered with hundreds of deadly missiles daily. American claims again fail the reality check.

There is no exception to escaping karma. While Israel did mass bombing on the Gaza Strip, erasing it to the ground, and so is Iran in the process of mercy bombing of Israel. Nobody ever wins in violence and war, but only suffers humiliation, defeat, destruction, and uselessness of objectives.

The global effect of the ongoing war is felt by the common man. The rising prices and even shortage of oil and food in several countries are severe. India does far better than many in the world until now. Definitely, the credit goes to the government for its efficient planning and strategy for sightedness.

The rising prices, especially of imported amino acids, are at crazy levels. Unfortunately, there are not sufficient alternatives to some of the critical amino acids that are not produced elsewhere, other than in a particular country. The market prices, like in all other Poultry produce, are purely dictated by the demand and supply. If this war continues for longer than expected, the industry is in for a long drawn struggle to manage this critical crisis situation. A significant increase in feed prices is also a big issue.

India successfully survived the coronavirus pandemic, much better than several other nations in the world, and we have the experience and strength to overcome challenges. This may be helpful to overcome the current crisis as well by providing more efficient alternative ideas that will be sustained and continue to grow.

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Mr. Balwant Singh Rana

Founder, Poultry Punch Publications (I) Pvt. Ltd.

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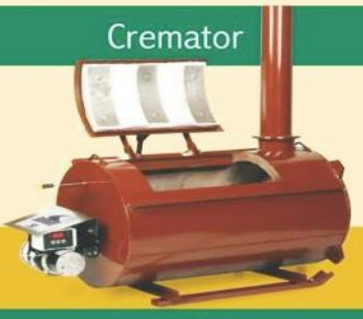

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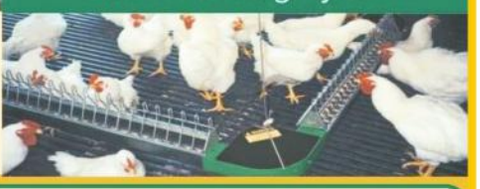

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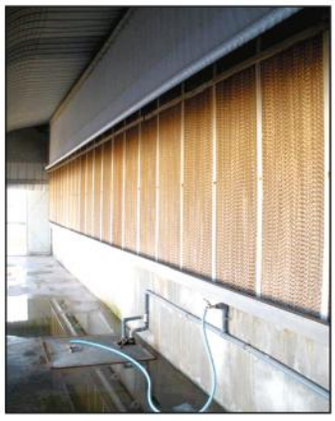

- Due to summer dust & scaling from water cooling pads get choked, thereby reducing cooling and air flow inside the shed.
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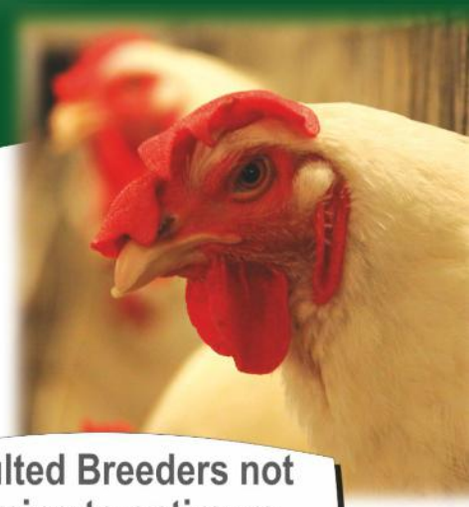

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Canafa Hosts Knowledge-Driven

Seminar on Mitigating Current Disease Challenges in Poultry and the Benefits of Bacteriophages

Focused Technical Engagement with Punjab Breeders 21st February 2026 | Sarovar Portico, Jalandhar

Canafa Solutions Pvt. Ltd. organized a focused technical seminar on 21st February 2026 at Sarovar Portico, Jalandhar, centered on the theme "Mitigating Current Disease Challenges in Poultry."

The seminar was exclusively designed for members of the Punjab Breeders' Association, aiming to address emerging disease pressures, evolving microbial challenges, and the growing need for sustainable health management practices in breeder operations.

Addressing the Current Disease Landscape

The technical proceedings commenced with an insightful address by Dr. Sushil Kumar Dhariwal, Veterinarian and Breeder Specialist, who presented a comprehensive overview of prevailing disease challenges impacting breeder productivity and profitability.

Dr. Dhariwal highlighted:

- Increasing enteric and systemic bacterial pressures
- The economic implications of compromised gut health
- The importance of preventive and biology-driven interventions
- Strengthening innate immunity through targeted nutritional support

His enriching perspectives, grounded in field experience and scientific understanding, stimulated meaningful discussions among the attendees and reinforced the urgency of adopting proactive health strategies.

Advanced Scientific Solutions for Modern Poultry Challenges

The seminar was further taken forward by Mr. Kanwaljit Singh Ahluwalia, Managing Director, Canafa Solutions Pvt. Ltd., who delivered a compelling presentation on advanced nutritional and biological solutions developed through collaborations with global research-driven organizations such as CBS Bio Platforms and Pathway Intermediates.

His session underscored:

- The role of bacteriophage technology as a targeted and safe approach to bacterial control
- The advancement of enzymatically enhanced yeast bioactives for improved solubility, bioavailability, and immune modulation

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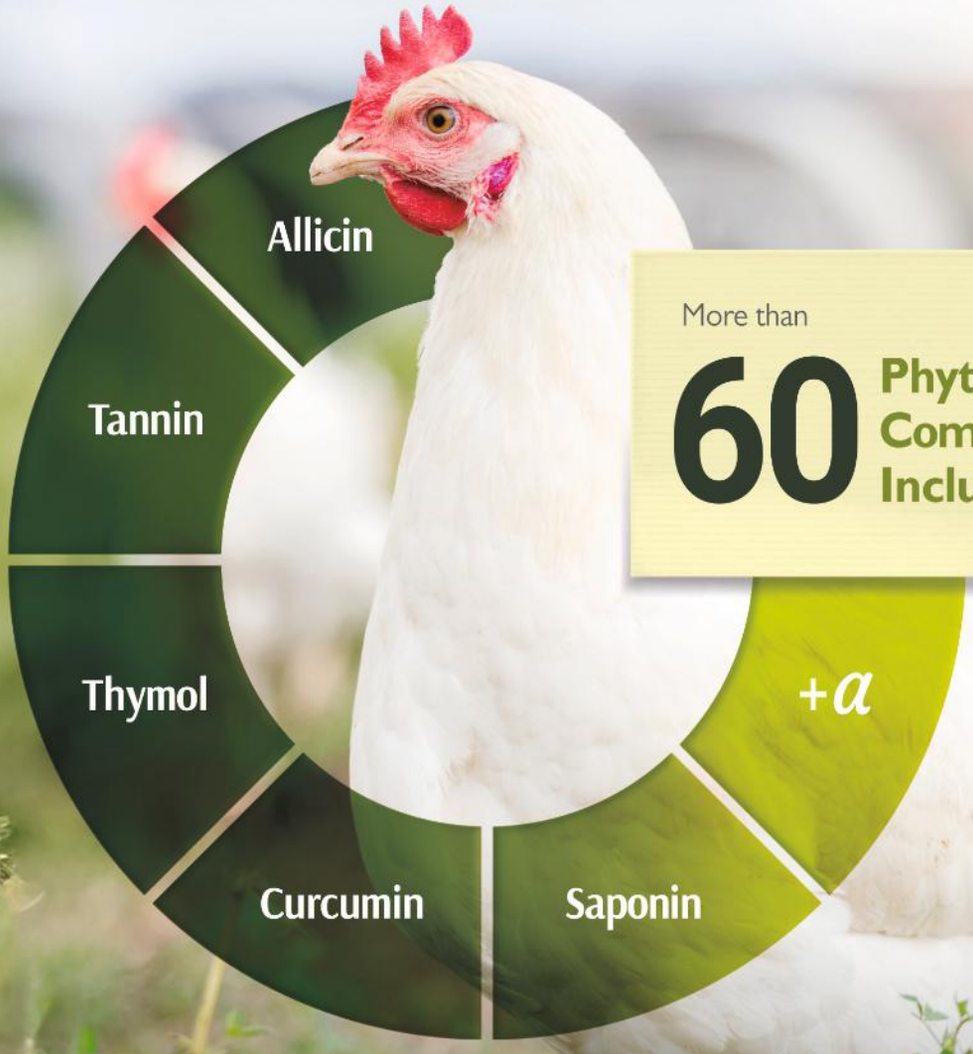

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- Ÿ Scientific validation through international university trials and industrial-scale verification systems
- Ÿ Antibiotic-alternative strategies backed by rigorous R&D and field performance data

Rather than positioning products as standalone interventions, the focus remained on integrated health management — combining gut stability, microbial balance, immune support, and performance optimization.

The audience appreciated the depth of research, global validation frameworks, and the scientific rigor behind these next-generation solutions.

Leadership & Collaborative Efforts

The successful execution of the seminar was supported by the dedicated efforts of Mr. Hitesh Tolia, General Manager - Sales & Marketing, along with the Canafa team, whose strategic coordination ensured active participation from key breeder stakeholders across Punjab.

The event reflected Canafa's continued commitment to fostering strong industry relationships through knowledge-sharing platforms.

Networking & Industry Fellowship

Following the technical deliberations, the evening concluded with a cocktail and dinner session, providing an opportunity for interactive discussions, professional networking, and strengthening collaborative ties within the breeder community.

Commitment to Poultry Health & Innovation

Through initiatives like this seminar, Canafa Solutions Pvt. Ltd. continues to reinforce its position as a knowledge-driven partner to the poultry industry bridging scientific innovation with field-level application to promote healthier flocks and sustainable breeder performance.

For more information, please visit:

Canafa Solutions Official Website: www.canafa.in

Contact:

Mr. Hitesh Tolia

General Manager (Sales & Marketing) | +91 9915217764

Ms. Kritika Lamba

Sales Coordinator | info@canafa.in, md@canafa.in

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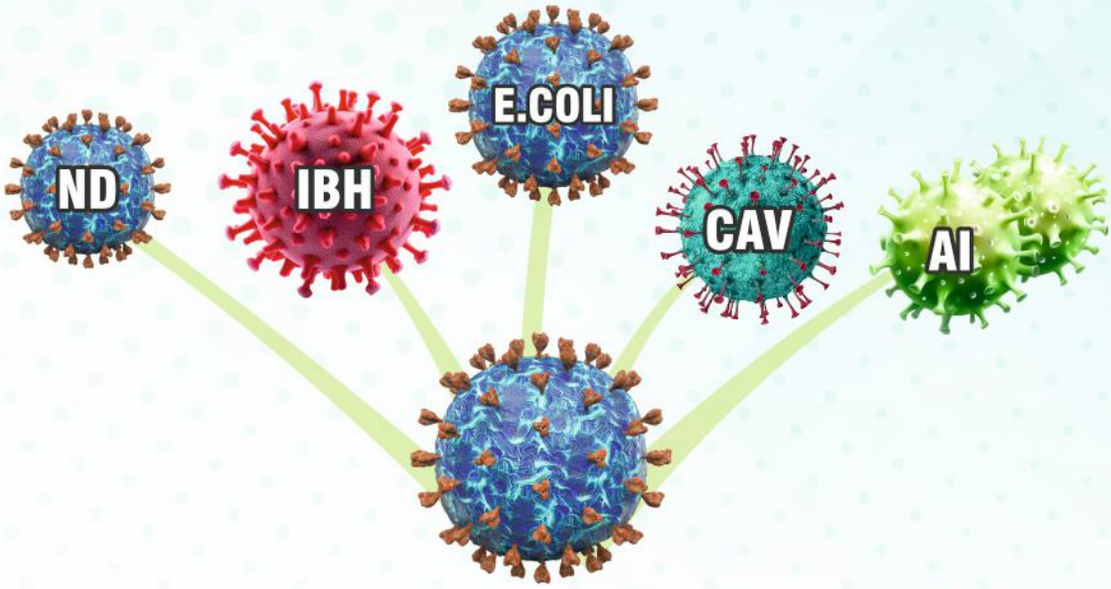

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NUQO Animal Nutrition India

Announces Two Key Appointments in North India to Drive Market Expansion

NUQO Animal Nutrition India Pvt. Ltd. has announced the appointment of two experienced professionals, Yogesh Srivastav and Prashant Kurele as Regional Sales Managers in North India, where they will be responsible for driving market expansion and customer partnerships across their respective regions. Further strengthening its commercial team as the company continues to expand its presence in the Indian animal nutrition market.

Yogesh Srivastav

Prashant Kurele

Yogesh Srivastav joins NUQO with over ten years of experience in animal nutrition and poultry business development. Prior to joining NUQO, he held key roles at Cargill Animal Nutrition and Huvepharma, where he managed strategic accounts and contributed to business growth across Uttar Pradesh and Uttarakhand.

Prashant Gupta has more than a decade of experience in animal health and poultry sales. He has worked with leading organizations such as MSD Animal Health, Zoetis India Ltd., Virbac Animal Health India Pvt. Ltd. and Provimi Animal Nutrition India Pvt. Ltd., building strong expertise in market development and customer engagement.

Both professionals will report to Dr. Krishnamurthy, Commercial Director - South Asia at NUQO Animal Nutrition India.

Commenting on the appointments, Neeraj Kumar Srivastava, Managing Director - South Asia at NUQO Animal Nutrition India, said:

"India continues to be a key growth market for NUQO, and strengthening our commercial team is essential as we expand our footprint. Yogesh and Prashant bring valuable industry experience and market understanding, and I am confident they will contribute significantly to delivering value to our customers and partners."

Dr. Krishnamurthy, Commercial Director - South Asia, added:

"North India is a key market for NUQO, and strengthening our commercial capabilities in this region is a priority for us. Yogesh and Prashant bring strong field experience and proven track records in customer engagement and business development. Their addition to the team will help us further expand our reach and deliver innovative nutritional solutions that support the productivity and sustainability goals of our customers."

Reena Rani, Head of Marketing - South Asia, also commented:

"At NUQO, we believe strong teams drive strong brands. With Yogesh and Prashant joining our commercial team, we are further enhancing our ability to support customers with innovative solutions and closer market engagement. Their addition reflects NUQO's commitment to building a dynamic and customer-focused organization in India."

NUQO continues to strengthen its presence in India in delivering innovative, sustainable solutions for the animal nutrition industry.

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ARTICLE

NUTRINOMICS

ABTL

ENZYMES • NUTRITION • TECHNOLOGY

Functional Systemic Enzymes: To shield against Immunosuppressive disease

Welcome to Nutrinomics...

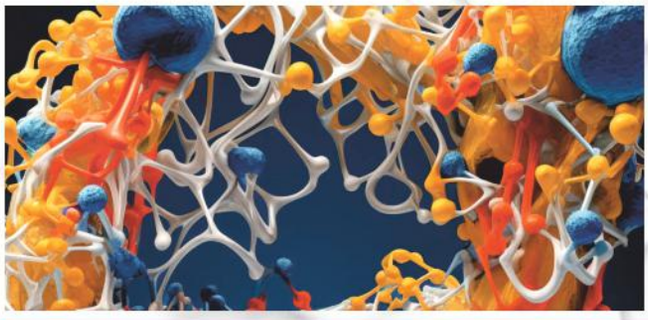
"Nutrinomics, is the merging of the nutrition and health economics disciplines to assess the impact of nutrition on animal health and disease and to illustrate the health and economic aspects of specific changes in the daily nutrition and nutrition recommendations through the lens of cost effectiveness".

Introduction to Immunity

Immunity
refers to the body's ability to resist or defend against infections, diseases, and other unwanted biological invasions. There are two main types of immunity

Innate immunity is the host's first line of defense against invading pathogens but some pathogens particularly immunosuppressive viruses have evolved sophisticated mechanisms to evade the host's innate immune responses and survive within the host. Adaptive Immunity targets specific pathogens that the body has encountered before. When the immune system fails, it can result in **immunosuppression.**

Immunosuppression originally defined as "a state of temporary or permanent dysfunction of the immune response resulting from damage to the immune system and leading to increased susceptibility to disease" includes suboptimal responses in antibody production, innate and cellular immunities.



Immunosuppression is a syndrome not a disease, Several environmental factors causing immunosuppression are related to management problems such as inadequate water or food supply, Nutritional deficiencies, Mycotoxins, Vaccinations, ammonia in the houses, excess dust, temperature stress, social interactions within a flock, and Infectious agents such as IBV, IBH, CIAV and Mareks.

Immunosuppression can increase susceptibility to infections and mortalities, increase feed conversion, reduce vaccine effectiveness and increase total production cost. As a result, they have substantial negative impacts on poultry health and welfare, and production performance in the poultry industry. Understanding the pathogenesis of immunosuppressive diseases is crucial to safeguarding health and productivity in the poultry industry.

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Pathogenesis of Immunosuppressive Diseases

Virus enters the body through various routes.

↓

Intial replication occurs in the small and large intestine.

↓

Viraemia occurs with spreading of virus to many organs like liver, kidney, heart, lungs, bone marrow & bursa.

↓

Virus can readily be isolated from faeces, ocular and nasal discharges.

↓

Affected organs show lesions at various degree.

↓

Chickens once affected become life long carrier.

IMMUNOTECH: The Lucrative solution for Immunosuppression

Immunotech is a mixture of functional enzymes and polyphenols, making it a powerful immunomodulator, anti-inflammatory, and antioxidant. Its unique formula not only enhances immunity but also helps to reduce inflammation and alleviate stress.

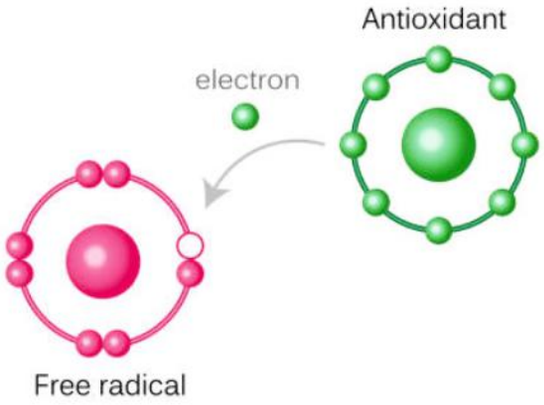
IMMUNOTECH targets and disrupts the proteins in virus cell walls, preventing the virus from replicating or attacking vital cells in the body. It revitalizes a compromised immune system, helping restore it to normalcy and supporting the fight against infections. It functions in various ways, including:-

As Immunity

- The enzymes present in IMMUNOTECH cleave the antigenic surface protein of organisms and digest their outer coat and the released enzyme-surface protein complex is ingested by macrophages and dendritic cells and induces higher antibody production.
- It inhibits the pathogen's ability to attach to host cells by reducing the receptors available for pathogens, thereby decreasing infectivity.
- When administered as a preventive measure, IMMUNOTECH functions like a "biological vacuum cleaner," purifying the blood and eliminating viruses from circulation. This significantly reduces the inflammatory response and enables normal immune functions to perform at a much healthier level.
- IMMUNOTECH causes the enhancement of immune cells to kill bacteria, viruses, molds and fungi.
- The systemic enzymes in IMMUNOTECH break down immune complexes and eliminate them from circulation paving the way for the immune cell's action.
- IMMUNOTECH boosts the bacteria-killing power of antibiotics and inhibits biofilm formation.

As Antioxidant

- Polyphenols such as rutin are potent antioxidants and effectively neutralize the harmful free radicals generated by any means such as a change in temperature, transportation, etc.



As Anti-inflammatory

- At the molecular level, IMMUNOTECH blocks pro-inflammatory metabolites such as histamine, serotonin, and bradykinin that drive inflammation. Its enzymes modify the arachidonate pathway, reducing thromboxane production without affecting cyclooxygenase. This results in reduced edema and inflammation, and restores balance between the two types of prostaglandins. Additionally, it enhances blood flow volume and fluidity, aiding in the removal of inflammatory by-products.
- Enzymes activate α-2 macroglobulin, a cytokine catcher that typically exists in its inactive (slow) form in the blood. This activation leads to a quicker clearance of cytokine TNF-a, thereby reducing the stimulus for the expression of adhesion molecules.

Trial Report

A straight run flock of 400 Cobb 400Y broiler chickens were distributed into 2 treatment groups and were raised on litter for 42 days. The birds were vaccinated according to the standard vaccination procedure against Newcastle disease (5-d and 20-d) and IBD (12-d).

The treatment diets were as follows:

1. T1: Control diet devoid of any immune stimulant.
2. T2: Control diet supplemented with Immunotech at the rate of 250 mg/kg feed throughout the experimental period.

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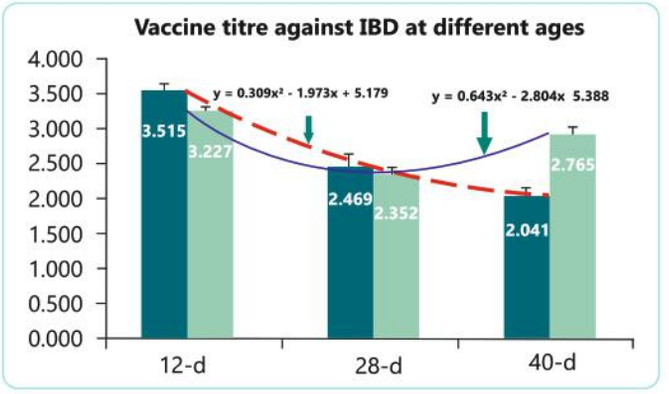
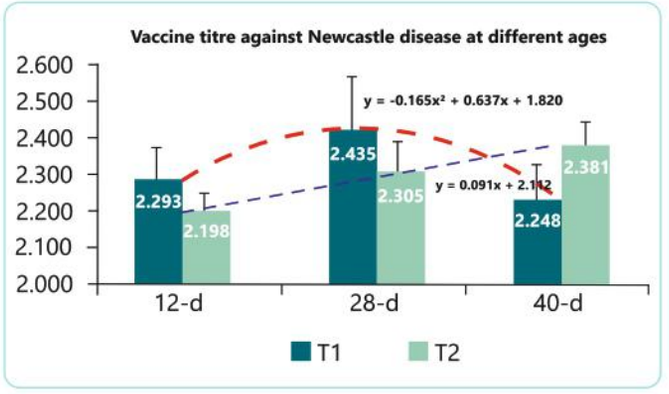
Vaccine titre against IBD

Vaccine titre (log10 values) against infectious bursal disease measured at 12-d, 28-d and 40-d of age is given below



Vaccine titre against IBD in the T1 group without any immune stimulant went on decreasing with age. On the contrary, in the T2 group, which was supplemented with Immunotech, vaccine titre decreased up to 28-d of age but increased thereafter at 40-d of age. Numerically, in the T2 group, IBD vaccine titre was comparatively lower when measured on 12-d and 28-d of age but it was significantly better when measured at 40 d of age ($P < 0.05$). The drop in the IBD titre value from 12-d to 40-d was 42 % while that in the T2 group was only 14%. The above data clearly indicate that supplementation of Immunotech has substantially improved IBD titre in the birds especially after 28-d of age.



The above values indicate clearly that the vaccine titre against ND in the control group increased at 20-d of age in both the groups as compared with the initial values (age effect $P < 0.05$). However, in the T1 group which was devoid of any immune stimulant the vaccine titre decreased when measured at 40-d of age and came back to its initial level. On the contrary, in the T2 group, which was supplemented with Immunotech, the vaccine titre against ND increased linearly and a difference of 8% hike in the ND titre value was obtained from the initial value in this case.

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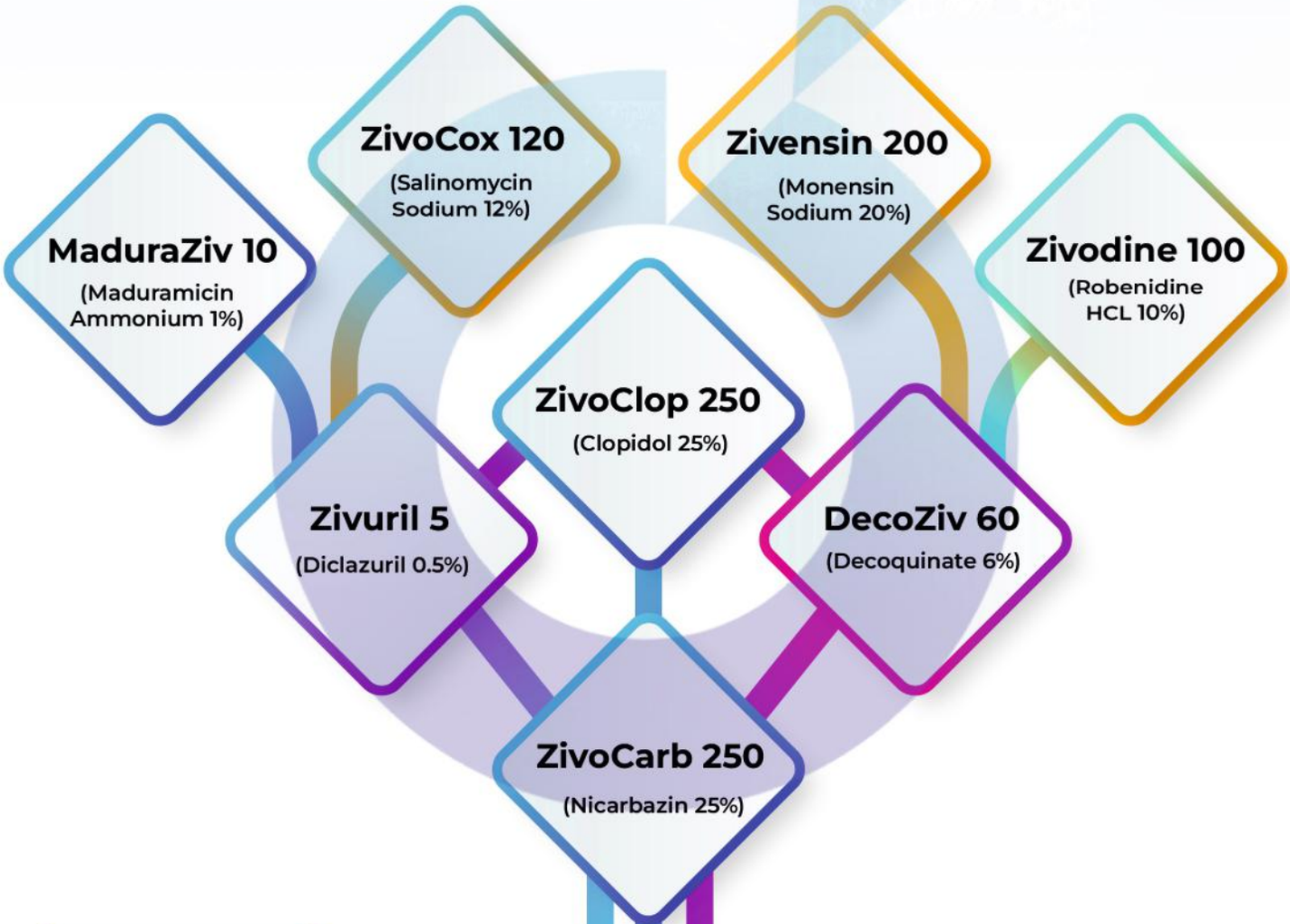

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ARTICLE

DDGS Quality, Affordability and Uses: An Academic Review

Prof. (Dr.) P.K. Shukla and Dr. Amitav Bhattacharyya

Abstract

Distillers Dried Grains with Solubles (DDGS) are a major co-product of the grain-based fuel ethanol industry and have emerged as a strategically important alternative feed ingredient for the livestock and poultry sectors. Escalating feed costs, increasing volatility in maize and soybean markets, expansion of biofuel policies, and growing emphasis on sustainability and circular bioeconomy models have intensified interest in DDGS worldwide and particularly in India. The Government of India's Ethanol Blending Programme (EBP), with a target of 20 percent ethanol blending in petrol, has significantly increased maize diversion toward fuel production, thereby exerting pressure on conventional feed supplies. In this context, DDGS offer a scientifically sound and economically viable mechanism to recycle nutrients back into animal production systems. This chapter provides a comprehensive academic review of DDGS with emphasis on quality attributes, nutrient composition, variability, affordability, and species-wise utilization, with a strengthened focus on poultry nutrition in broilers and layers. Processing technologies, physical and chemical quality indicators, mycotoxin risks, economic evaluation, Indian feed industry relevance, and sustainability implications are discussed in detail. The chapter is aligned with ICAR and UGC academic standards and is suitable for use as a book chapter, teaching reference, or policy-oriented technical document.

1. Introduction

Feed constitutes the single largest component of production cost in intensive livestock and poultry systems, accounting for nearly 65-70 percent of total operational expenditure. In India, the rapid expansion of the poultry sector, especially commercial broiler and layer production, has resulted in a sharp increase in demand for energy- and protein-rich feed ingredients. Maize and soybean meal form the backbone of poultry feed formulations; however, their availability and prices are increasingly influenced by climatic variability, global trade dynamics, competition with human food consumption, and industrial utilization.

The growing integration of agriculture with the energy sector has further complicated feed resource availability. Biofuel policies, particularly those promoting grain-based ethanol production, have altered traditional demand-supply relationships for cereals. While such policies enhance national energy security and farmer incomes, they also create competition between food, feed, and fuel uses of grains. As a result, the livestock and poultry industries are compelled to explore alternative feed ingredients that can partially substitute conventional raw materials without compromising productivity, product quality, or animal health.

Distillers Dried Grains with Solubles (DDGS) have emerged as one of the most important alternative feed resources under these circumstances. Once considered a low-value by-product of the ethanol industry, DDGS are now recognized as a nutritionally rich ingredient containing concentrated levels of protein, energy, minerals, and bioactive compounds. Their utilization aligns with the principles of circular economy by converting industrial co-products into valuable animal feed, thereby improving overall resource-use efficiency. Nevertheless, concerns regarding variability in nutrient composition, heat damage during processing, mycotoxin concentration, and inconsistent quality standards continue to limit their wider adoption. This chapter critically examines DDGS quality, affordability, and uses, with special reference to Indian poultry production systems.

2. Ethanol Blending Programme in India and Its Implications for Feed Resources

2.1 Overview of the Ethanol Blending Programme

The Ethanol Blending Programme (EBP) of the Government of India aims to achieve 20 percent blending of ethanol with petrol as part of a broader strategy to reduce dependence on imported fossil fuels, enhance energy security, mitigate greenhouse gas emissions, and augment farmer incomes. In recent years, significant investments have been made in grain-based distilleries, with maize emerging as a preferred feedstock alongside sugarcane-based molasses and surplus grains.

2.2 Maize Diversion and Feed Industry Concerns

Maize is the primary energy source in poultry diets, accounting for 50-60 percent of feed formulations. Increased diversion of maize toward ethanol production has contributed to price escalation and supply uncertainty for the feed industry. This situation is particularly challenging for poultry producers, who operate on narrow margins and are highly sensitive to feed price fluctuations. Under such conditions, DDGS production has increased proportionately with ethanol output, creating an opportunity to recycle nutrients back into the feed chain and partially offset the impact of maize diversion.


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2.3 DDGS as a Strategic Feed Resource in India

Indigenous production of DDGS offers a strategic advantage by reducing dependence on imported feed ingredients and improving feed self-sufficiency. However, to fully realize this potential, issues related to quality assurance, standardization, and species-specific feeding guidelines must be systematically addressed.

3. Origin and Processing of DDGS

3.1 Dry-Grind Ethanol Production Process

DDGS are generated through the dry-grind ethanol production process, which accounts for the majority of ethanol plants globally and in India. In this process, cereal grains such as maize are ground and mixed with water and enzymes to convert starch into fermentable sugars. Yeast fermentation converts these sugars into ethanol and carbon dioxide. Following distillation, the remaining non-fermentable fraction, known as whole stillage, contains protein, fibre, oil, minerals, and residual starch.

Whole stillage is centrifuged to separate wet distillers grains (WDG) from thin stillage. Thin stillage is concentrated through evaporation to form condensed distillers solubles (CDS), which are subsequently blended back with WDG. The combined product is then dried to produce DDGS. Each step in this process influences the nutritional and physical characteristics of the final product.

3.2 Processing Variations and Their Effects

Variations in grain quality, fermentation efficiency, drying temperature, residence time, and oil extraction practices contribute to substantial variability in DDGS composition. Excessive heat during drying can result in Maillard reactions that reduce the availability of lysine and other heat-sensitive amino acids. The growing adoption of oil extraction technologies has led to the production of reduced-oil DDGS, which possess lower energy density but higher protein concentration, necessitating careful formulation adjustments.

4. Chemical Composition and Nutritional Profile of DDGS

4.1 Proximate Composition

On a dry matter basis, maize-based DDGS typically contain 26-30 percent crude protein, 6-10 percent crude fat (lower in de-oiled DDGS), 8-10 percent crude fiber, and 3-5 percent ash. Since starch is largely removed during fermentation, remaining nutrients are concentrated approximately threefold compared to the original grain.

Table 1. Typical nutrient composition of maize-based DDGS (DM basis)

- Crude protein: 28%
- Crude fat: 8%
- Crude fiber: 9%
- Ash: 4%
- Metabolizable energy (poultry): 2,300-2,500 kcal/kg
- Available phosphorus: 0.40-0.50%

4.2 Amino Acid Profile and Protein Quality

DDGS are a valuable source of several essential amino acids, including methionine, cysteine, and threonine. However, lysine is often the first limiting amino acid due to heat damage during drying. The digestibility of amino acids varies widely among DDGS sources, underscoring the importance of using digestible amino acid values rather than total amino acid content in feed formulation, particularly for poultry.

4.3 Energy and Mineral Availability

Residual oil and fermentable fibre contribute significantly to the metabolizable energy value of DDGS. In addition, DDGS are an excellent source of phosphorus, much of which is present in a more bioavailable form than phosphorus in unprocessed grains. This characteristic reduces the need for inorganic phosphorus supplementation and contributes to lower phosphorus excretion, with positive environmental implications.

5. Quality Attributes and Variability in DDGS

5.1 Physical Quality Indicators

Physical characteristics such as colour, bulk density, particle size, and flowability provide rapid indicators of DDGS quality. Lighter-coloured DDGS are generally associated with better amino acid digestibility, whereas darker products often indicate excessive heat exposure. Poor flowability and caking can pose challenges during storage and handling.

5.2 Chemical Quality and Mycotoxin Risks

Mycotoxins present in the original grain are not destroyed during ethanol production and may become concentrated up to threefold in DDGS. Aflatoxins, fumonisins, deoxynivalenol, and zearalenone are of particular concern in poultry feeds. Routine laboratory screening and adoption of mycotoxin mitigation strategies are essential to ensure safe utilization.

6. Affordability and Economic Evaluation of DDGS

6.1 Price Dynamics and Market Behaviour

The price of DDGS is influenced by maize prices, ethanol demand, oil extraction practices, transportation costs, and regional supply-demand dynamics. In many markets, DDGS are priced 10-25 percent lower than soybean meal on a protein-equivalent basis, making them an economically attractive ingredient.

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6.2 Cost-Benefit Analysis in Poultry Feed Formulation

Least-cost formulation studies indicate that strategic inclusion of DDGS can reduce feed costs without compromising bird performance, provided that nutrient variability is properly accounted for. Savings are particularly significant during periods of high maize and soybean meal prices.

6.3 Indian Feed Industry Perspective

For the Indian poultry sector, DDGS represent a potential buffer against feed cost volatility induced by ethanol-driven maize diversion. However, consistent supply, assured quality, and greater awareness among nutritionists and feed manufacturers are prerequisites for wider adoption.

7. Poultry-Specific Applications of DDGS

7.1 Use of DDGS in Broiler Nutrition

In broiler diets, DDGS can be incorporated at levels of 5-6 percent in starter rations and up to 10-12 percent in grower and finisher diets. Benefits include partial replacement of maize and soybean meal, cost reduction, and contribution of natural pigments. Excessive inclusion, however, may negatively affect feed conversion due to higher fibre content.

7.2 Use of DDGS in Layer Nutrition

In layers, DDGS are commonly included at 5-10 percent levels without adverse effects on egg production, egg weight, or shell quality when diets are properly balanced. The xanthophyll content of DDGS enhances yolk pigmentation, which is a desirable trait in many markets.

Table 2. Recommended DDGS inclusion levels in poultry diets

- Broiler starter: 5-6%
- Broiler grower-finisher: 8-12%
- Layer grower: 5-7%
- Layer laying phase: 7-10%

8. Utilization of DDGS in Other Livestock Species

DDGS are extensively used in swine diets due to their favourable amino acid profile and energy content, with inclusion levels reaching up to 30 percent in grower-finisher diets. In ruminants, DDGS serve as an excellent source of rumen-undegradable protein and energy, supporting milk production and growth performance. Their use in aquaculture is emerging, particularly for herbivorous and omnivorous species, although fibre content remains a limiting factor.

9. Quality Assurance, Standards, and Regulatory Framework

Effective utilization of DDGS requires robust quality assurance systems encompassing supplier certification, routine laboratory testing, traceability, and adherence to feed safety standards. In India, alignment with FSSAI regulations and BIS specifications is essential to build confidence among feed manufacturers and livestock producers.

10. Sustainability and Environmental Implications

Utilization of DDGS enhances sustainability by improving resource-use efficiency, reducing waste from ethanol production, and lowering the environmental footprint of animal agriculture. By reducing dependence on conventional feed ingredients, DDGS contribute to climate-smart and economically resilient livestock production systems.

11. Future Perspectives

Advances in processing technologies, nutrient fractionation, enzyme supplementation, and precision nutrition are expected to improve DDGS quality and utilization. Development of standardized grading systems and greater integration of DDGS into feed policy frameworks will further enhance their role in feed security.

12. Conclusion

Distillers Dried Grains with Solubles represent a nutritionally sound, economically viable, and strategically important feed ingredient in the context of expanding ethanol production and increasing feed grain competition. With appropriate quality control, formulation strategies, and policy support, DDGS can play a pivotal role in sustaining growth of the Indian poultry and livestock sectors while aligning with national goals of energy security and sustainability.

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In our journey we visited many faces with our poultry Sector legends, and one among them is Mr. Balwant Singh Rana

Founder, Poultry Punch Publications (I) Pvt. Ltd.

1. Are you originally from Delhi?

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The overwhelming trust of our readers and advertisers across India and abroad has been the most fulfilling part of our journey.

3. What is the right motivation you liked in the journey?

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4. Why did you choose the Poultry/ Livestock profession?

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5. As compared to other big players in the industry, how do you feel your organization is different?

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6. Please tell us about your family.

Poultry Punch is a professional family of editors, contributors, and designers passionate about poultry journalism. Our extended family is the vast poultry fraternity we serve.

7. What do you think about your organisation being a leader in the livestock industry?

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8. What is your dream for the next generation entering this business?

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9. What is your favourite eatery food?

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10. What are your hobbies?

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11. Anything you would like to add?

We're grateful to the poultry community for its continued faith. Poultry Punch will always remain committed to being its voice, bridge, and platform.

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Strategies to Reduce Heat Stress in Commercial Layers

Dr. Kavya A and Prabakar Ramamoorthy
Kemin Industries South Asia Pvt. Ltd.

Introduction

Heat stress refers to a physiological condition in which the bird's thermoregulatory capacity is exceeded, preventing adequate dissipation of metabolic heat. This imbalance activates a cascade of endocrine, metabolic, and behavioral responses that significantly compromise productivity and welfare. In tropic climatic regions such as India, where ambient temperatures may reach 48 °C, the thermal load imposed on commercial layers exceeds their thermoneutral threshold. Consequently, without targeted intervention, heat stress results in measurable declines in egg production, egg quality, feed efficiency, immune competence, and overall survival. Therefore, implementation of scientifically validated heat mitigation strategies is essential to sustain performance and minimize economic losses.

Understanding Heat Stress and Its Impact on Layers

Relationship Between Environmental Temperature and Relative Humidity

Heat stress arises from the combined effects of temperature and humidity, termed effective temperature. Higher humidity exacerbates bird discomfort and heat stress. Producers should use temperature and humidity loggers to accurately monitor environmental conditions. During the day, higher temperatures and lower humidity favor evaporative cooling via ventilation or foggers. Conversely, in the evening, when humidity rises, additional moisture from foggers may exacerbate heat stress. In such cases, increased air movement alone helps reduce stress by creating a wind-chill effect.

Pathophysiology of Heat Stress

- Heat stress develops when ambient temperature exceeds the hen's thermoneutral zone (18-25 °C), surpassing its physiological capacity for **sensible and latent heat dissipation**.
- Hyperthermia activates the **hypothalamic pituitary adrenal (HPA) axis**, increasing corticosterone secretion and diverting metabolic energy toward thermoregulation rather than production.

Thermoregulatory Responses

- Birds exhibit **compensatory evaporative heat loss mechanisms** such as panting, which decreases blood CO_2 and predisposes to **respiratory alkalosis**. Additional indicators include increased water intake, lethargy, wing-spreading, open-mouth breathing, and finally, collapse due to heatstroke.

Nutritional Consequences

- Feed intake declines by **2.5 - 3g per °C above 30 °C**, reducing metabolizable energy and essential nutrient availability for productive functions.
- Reduced intake increases the risk of **negative energy balance**, suppresses protein accretion, and accelerates mobilization of endogenous reserves.

Gastrointestinal Pathophysiology

- Heat stress compromises **intestinal epithelial integrity**, reducing villus height and tight-junction stability, leading to impaired nutrient absorption.
- Digestive enzyme activity is reduced, diminishing proteolysis, amylolysis, and lipolysis efficiency.
- Dysbiosis occurs due to the disruption of beneficial gut microbiota, promoting **gut inflammation**, oxidative stress, and immunosuppression.

Reproductive & Production Effects

- Decline in egg production ranges from **10% to 20%**, driven by impaired ovarian follicular development and reduced circulating reproductive hormones.
- Egg weight decreases typically by **3 - 5%**, reflecting reduced nutrient partitioning toward oviductal output.
- Eggshell thickness declines during heat stress, which is linked to reduced intestinal Calcium absorption and altered acid-base balance affecting shell gland carbonic anhydrase activity.
- Albumen quality and yolk pigmentation decrease due to oxidative stress and reduced amino acid and pigment availability.

Economic Impact

- Severe hyperthermia leads to **circulatory collapse**, multi-organ dysfunction, dramatically increasing mortality, resulting in substantial economic losses.

Strategic Interventions

Combating heat stress requires a combined strategy focusing on the environment and precision nutrition.

I. Environmental Optimization for Thermal Load Reduction

Establishing a controlled microclimate is critical to maintaining the hen's thermoregulatory stability under high ambient temperatures. Creating a cooler, low-humidity environment reduces metabolic heat load and prevents activation of heat stress induced endocrine pathways.

Ventilation: High capacity axial or tunnel ventilation fans are required to increase convective heat loss and maintain optimal air velocity across the bird's boundary layer. Proper fan calibration, placement, and routine maintenance ensure consistent negative-pressure ventilation efficiency.

Fogging Systems: Effective in low-humidity conditions, foggers generate fine aerosol droplets that enhance evaporative heat loss. Droplet size must be precisely regulated to avoid excessive litter moisture and subsequent ammonia volatilization. During peak summer, the fogger should be used based on a running time of 2 minutes for every 10 minutes.

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Gunny-Curtain Drip System: Thin jute curtains with a controlled drip mechanism provide dual benefit - shading and evaporative cooling - reducing shed temperature by 3-5 °C. Installation must ensure uniform water distribution, a regulated flow rate, and efficient drainage to prevent excess humidity.

Roof Sprinkler Systems: Periodic surface wetting reduces solar heat absorption through evaporative cooling at the roof interface.

Straw Thatching: A traditional but thermodynamically effective insulation strategy; a 5 – 6-inch thatch layer reduces conductive heat transfer and lowers internal shed temperature.

Others

Insulation: Thermal insulation of roofs and sidewalls reduces conductive heat flux into the poultry house, stabilizing internal temperatures during peak heat periods.

Stocking Density: Lowering bird density reduces collective metabolic heat production and improves convective airflow between cages or floor areas, reducing heat accumulation.

II. Precision Nutrition for Heat-Stressed Layers

Nutritional strategies form a critical component of mitigating the physiological burden of heat stress in commercial layers, as elevated ambient temperatures significantly alter metabolic heat production, endocrine responses, gastrointestinal function, and nutrient partitioning.

Altering Feed Formulation

Energy Modulation

- Partial replacement of carbohydrate-derived energy with **high-quality vegetable lipids** (soybean or rice bran oil at 1-2% of diet) increases dietary energy density while lowering the **heat increment of feeding**, thereby reducing endogenous metabolic heat production. This lipid supplementation also improves feed palatability, enhances micelle formation, and optimizes intestinal absorption efficiency under thermal load.
- During conditions exceeding 27 °C, dietary metabolizable energy should be increased by approximately 5% to counter the reduced voluntary feed intake associated with hyperthermia-induced anorexia.
- An increase in ME, especially from cereal starch or excess protein, raises dietary heat increment, accelerating intake suppression.
- **The best solution** is to change the source of energy, which is very Important. **Increase Energy via fat/oil.** Avoid excess maize/rice. Oil provides 2.25 times more energy than carbohydrates, with the lowest heat increment.
- Since energy correction is mainly through added oil, emulsifier support (**Lysoforte at 200g/MT**) can help improve fat digestion & absorption, allowing the birds to extract more energy from added oil even at reduced feed intake.
- Prevent oxidative rancidity of dietary lipids by inclusion of **synthetic antioxidants** such as BHT (Butylated Hydroxy Toluene), and TBHQ (Tertiary Butylhydroquinone) (**ENDOX™ T Dry at 150g/MT**), thereby preserving lipid integrity and preventing peroxidative stress.

Protein & Amino-Acid Optimization

- Crude protein levels must be maintained at thermoneutral nutritional requirements, as heat stress depresses feed intake and thereby lowers absolute protein consumption. Excess protein should be avoided due to the greater **specific dynamic action** (heat produced during deamination and urea cycle metabolism).
- Ensuring a **balanced amino acid profile** - notably lysine, methionine, threonine, and other limiting amino acids which are essential to sustain oviductal protein synthesis and egg mass deposition under reduced feed intake.
- Use of **highly digestible protein sources** and exogenous **protease enzymes** enhances amino acid bioavailability, reduces metabolic heat output, and helps maintain gut absorptive capacity in heat-stressed layers.

Micronutrient Fortification

- Supplementation of **10-15% additional vitamins and minerals** compensates for heat-induced reductions in digestive efficiency and increased physiological demand.
- **Vitamin E (100-250mg/kg)** functions as a membrane-stabilizing antioxidant, reducing lipid peroxidation and mitigating systemic oxidative stress.
- **Vitamin C (100-200 mg/kg)** supports redox balance, attenuates corticosterone-mediated stress responses, and protects against thermal oxidative damage.
- **Vitamin A (15,000 IU/kg)** sustains epithelial integrity and immune competence compromised during heat exposure.
- **25-Hydroxyvitamin D_3 (75 µg/kg)** improves calcium absorption efficiency, stabilizes shell gland carbonic anhydrase activity, and maintains eggshell quality despite reduced feed intake and altered endocrine status

Minerals & Osmoregulation

- **Zinc (80-120mg/kg)** modulates antioxidant enzyme systems (e.g., Zn-dependent SOD), enhances immune function, and supports eggshell matrix formation.
- **Phosphorus inclusion should be elevated by ~5%** due to reduced absorption efficiency and increased physiological requirement during heat stress.
- Supplement **chromium + vitamin C (CHROMFLEX™ - C Dry at 250g/MT)** to improve endothelial integrity, glucose utilization, chromium enhances insulin sensitivity, while vitamin C reduces corticosterone and mitigates hyperthermia-induced oxidative stress.

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- Inclusion of **Osmo protective such as choline chloride & Betaine** to support hepatic methyl group metabolism and lipid mobilization; during peak summer, the inclusion rate must be increased to **1kg and 500g/ton,** respectively, to counteract heat induced osmotic stress and maintain cellular membrane stability.

Electrolyte & Acid-Base Balance

- Maintaining a **dietary electrolyte balance (DEB) of 250mEq/kg** is essential to support acid-base homeostasis and counteract respiratory alkalosis associated with panting.
- Supplementation of **sodium bicarbonate (0.2-0.3%)** provides buffering capacity, stabilizes blood pH, and improves eggshell deposition under heat stress induced acid base disturbances.

Digestive Modifiers & Gut Health

- To counteract heat-induced reductions in digestive efficiency, **multi-component exogenous enzymes** are commonly incorporated in layer diets. These enzyme systems support the hydrolysis of complex feed substrates and help maintain nutrient digestibility when endogenous enzyme secretion declines during thermal stress.
- Incorporation of **poultry-specific probiotics (CLOSTAT™ 365 Dry at 200g/MT & KURACO™ HC at 200g/MT)** improves microbial homeostasis, reduces thermal dysbiosis, supports mucosal immunity, and mitigates performance losses.
- Heat stress shortens **intestinal villus height**, reducing absorptive surface area. Hence, butyric acid should be added to promote villus regeneration since butyric acid serves as a primary energy substrate for colonocytes. **(e.g., ButiPEARL™ Dry at 300g/MT)**
- Supplementation of **immunomodulators either through feed as algal 1,3-ß-glucans (ALETA™ Flex at 500g/MT) or through water (Durim™ at 20g/100 birds)** is critical to upregulate innate immunity, enhance macrophage activation, and reduce immunosuppression triggered by heat stress.

Feed Texture & Physical Form

- Offer a coarse mash with added oil to improve palatability and stimulate feed intake. Providing a **coarse particle mash supplemented with functional lipids** enhances feed palatability and prolongs gizzard retention time, thereby improving nutrient digestibility under thermally stressful conditions. The inclusion of oil also minimizes dustiness and reduces the **heat increment of feeding**, lowering endogenous heat production.

Thermal Optimized Feeding Schedule

- Feeding should be strategically shifted to **cooler periods** of the day (early morning and late evening) to align nutrient intake with the bird's lowest thermal load.
- Implementation of a **midnight feeding window** (1.5-2 hours of supplemental light) enhances nocturnal feed intake when ambient temperatures are lowest, improving calcium absorption kinetics and supporting **eggshell calcification during the shell gland active phase.**
- Under severe heat episodes, **temporary feed withdrawal** helps reduce metabolic heat production (specific dynamic action), preventing hyperthermic collapse during peak temperature hours.
- Supplementation of **coarse limestone in late afternoon** provides a sustained-release calcium source, optimizing shell deposition during the overnight calcification period.

Water Availability

- Continuous access to **cool, clean, low-contaminant water** is essential, as water-to-feed consumption ratios increase dramatically under heat stress conditions due to elevated evaporative cooling demands.
- Water temperature should be maintained **below 25 °C**, as cooler water functions as a physiological heat sink, increasing conductive cooling and helping maintain core body temperature. Frequent flushing of lines during peak heat prevents thermal gain and microbial proliferation.

III. Additional Management Considerations

- Operational procedures such as vaccination, weighing, or flock handling should be scheduled exclusively during low-thermal-load periods to prevent additive physiological stress.
- Vaccines must be administered during early morning hours, when ambient temperatures and metabolic load are minimal, to avoid heat-exacerbated immunosuppression.
- Elevated ambient temperature and humidity accelerate fungal proliferation and mycotoxin biosynthesis in stored or wet feed. To prevent toxicosis-associated hepatic and gastrointestinal damage, the inclusion of a broad-spectrum mycotoxin adsorbent, such as TOXFIN™ 360 Dry, **at 1kg/MT** is essential for maintaining feed safety and intestinal integrity.

Conclusion

Effective mitigation of heat stress in commercial layers requires an integrated, evidence-based strategy combining optimized microclimate control, precision nutritional fortification, and thermally informed husbandry practices. Ensuring adequate ventilation & evaporative cooling, while targeted nutritional adjustments including energy modulation, amino-acid balancing, micronutrient enrichment, and electrolyte stabilization counteract heat stress related reductions in feed intake, gut integrity, and nutrient absorption. Together, these coordinated interventions enhance physiological resilience, sustain egg production, shell quality, and support flock survivability during periods of elevated ambient temperature.

References are available upon request.

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ARTICLE

Beware of Poultry diseases in Summer Season

Dr. R.N.S. Gowda*

Our country is heading into a **hotter-than-normal** summer for 2026. The India Meteorological Department (IMD) recently warned that most of the country will face an above-average number of **heatwave days** from March to May.

Summer stress is a major challenge in poultry production, especially during the summer months. It occurs when birds face difficulty in achieving a balance between body heat produced and heat lost. This imbalance can lead to several health issues and production losses.

Summer in poultry farming brings unique challenges, primarily because birds **lack sweat glands** and rely on respiration to cool down. High temperatures lead to **Physiogical changes** making your flock significantly more susceptible to both environmental stress and infectious outbreaks.

Why Poultry is more prone to diseases in summer?

Poultry is more prone to diseases in summer primarily because high temperatures and humidity trigger a cascade of physiological and environmental changes that weaken their natural defenses. Unlike mammals, birds **lack sweat glands** and have feathers that trap heat, making it extremely difficult for them to cool down once environmental temperatures exceed their "comfort zone" or thermoneutral zone (typically 18°C-22°C).

Any increase in temperature brings in Physiological Consequences

1. Respiratory & Metabolic Strain

- **Panting & Alkalosis:** Birds rely on rapid panting to dissipate heat. This leads to an excessive loss of CO2, causing **respiratory alkalosis** (blood becomes too alkaline). This imbalance stresses the body and interferes with critical functions like eggshell mineralization in layers.
- **Energy Drain:** Panting and maintaining a high body temperature consume massive amounts of energy that would otherwise be used for growth or immune defense.
- **Performance Loss:** Broilers see reduced body weight gain and poor meat quality (e.g., **pale, soft, and exudative meat**), while layers experience a drop in egg production, size, and shell strength.

2. Gut Health & "Leaky Gut"

To cool down, poultry divert blood flow away from internal organs (like the gut) to their skin and respiratory surfaces. This causes:

- **Leaky Gut**: Heat stress reduces blood flow to the internal organs, causing hypoxia and oxidative stress in the intestines. This compromises the gut barrier, allowing pathogens and toxins to enter the bloodstream.
- **Intestinal Ischemia:** A lack of oxygen and nutrients in the gut leads to the breakdown of the intestinal lining, a condition known as **"Leaky Gut"**.
- **Bacterial Translocation:** Toxins and harmful bacteria (like *Salmonella* and *E. coli*) can leak from the gut into the bloodstream, causing systemic infections.
- **Dysbiosis:** Heat alters the gut's microbial balance, reducing beneficial bacteria and allowing pathogens to flourish, which often leads to **Necrotic Enteritis**

3. Immunosuppression (Weakened Immunity)

Heat stress acts as a major immunosuppressant. It triggers the release of stress hormones like **corticosterone**, which leads to:

- **Regression of Immune Organs:** Significant shrinking of the spleen, thymus, and bursa of Fabricius, which are critical for producing white blood cells and antibodies.
- **Reduced Antibody Production:** Lower levels of circulating antibodies (IgG, IgM, and IgA), making vaccinations less effective and birds more vulnerable to viral outbreaks like Newcastle Disease.
- **Cellular Damage:** Heat stress causes **oxidative stress**, where an overproduction of free radicals damages cells, including immune cells, further reducing the bird's ability to fight infection.

4. Environmental Factors

- **Pathogen Proliferation:** Warm, humid conditions are ideal for the rapid growth of bacteria, fungi (molds), and viruses in feed, water, and litter.
- **Poor Air Quality:** Increased humidity and wet litter lead to higher **ammonia** levels, which irritate the respiratory tract and make birds more susceptible to respiratory diseases.

Common diseases in summer are:

- **Heat Stress/Heat Stroke:** The primary issue, caused by the absence of sweat glands, leading to panting, wing lifting, reduced appetite, and death, particularly between 5 pm and 7 pm.
- **Viral Outbreaks :** Immunodeficiency during heat can trigger outbreaks of Newcastle Disease (Ranikhet), Infectious Bronchitis (IB), and Fowl Pox, which is often spread by increased mosquito activity.
- **Bacterial Infections:** Warm, humid conditions favor the growth of pathogens like **Salmonella**, **Campylobacter**, and **Colibacillosis**.

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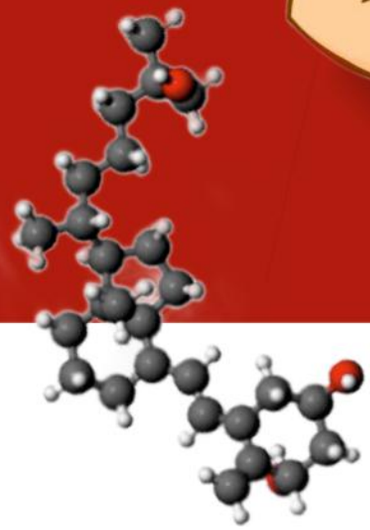

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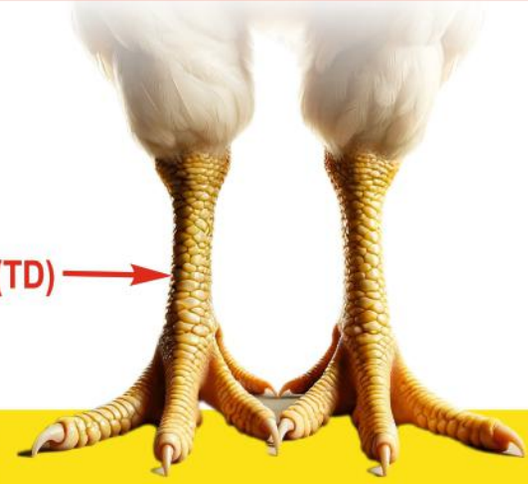

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- **Necrotic Enteritis & Coccidiosis:** Heat stress damages intestinal integrity and alters microbiota, fostering bacteria and protozoa, which increases susceptibility to necrotic enteritis.
- **Salmonellosis (Pullorum/Typhoid):** High temperatures can exacerbate these bacterial infections.
- **Fowl Cholera:** Characterized by labored breathing, diarrhea, and decreased activity.
- **Respiratory Issues:** Increased dust and poor air quality in warm, humid weather can lead to sneezing and wheezing. High ammonia buildup from wet litter combined with heat can cause Chronic Respiratory Disease (CRD), leading to sneezing, rales, and swollen faces.
- **Parasite Infestations:** Mites, lice, and flies thrive in summer, causing skin irritation and disease transmission. Summer heat accelerates the life cycles of **mites, lice, and ticks**, which can further drain a bird's energy and immunity. Table1. Occurrence of diseases in summer.

Table 1. common occurrence of diseases and parasites during summer.

S No.	Bacterial	Viral	Fungal	Parasitic
1	Salmonella	Fowl Pox	Aspergillosis	Ascaridiasis
2	Mycoplasma-MG,MS	vvND	Candidiasis	Tapeworms
3	Colibacillosis	IB		Lice
4	Infectious Coryza	ILT		mites
5	Pasteurellosis	HPAI		ticks
6	Campylobacter	IBD		

Preventive Management Strategies

Avoiding summer diseases in poultry requires a proactive, multi-faceted approach focusing on mitigating heat stress, which is the primary cause of immunosuppression and mortality (Colibacillosis, Coryza, Coccidiosis). Key strategies include maintaining a cool, well-ventilated environment, adjusting nutrition, ensuring constant access to cold water, and strict biosecurity.

1. Housing & Environmental Control

- **Ventilation:** Use exhaust fans and foggers to increase air velocity. Foggers can reduce house temperatures by 5-10°C.
- **Stocking Density:** Reduce bird density by **10-20%** to allow more floor space for heat dissipation.
- **Roof Treatment:** Whitewash the roof with lime to reflect solar radiation or use thatching with agricultural waste like paddy straw for insulation.
- **Litter Care:** Maintain **dry, loose litter** (maximum 2 inches thick) to prevent ammonia release and bacterial flourishing.
- **Biosecurity:** Maintain strict quarantine for new birds and prohibit wild birds, which are carriers of diseases like **Avian Influenza**, from entering the shed.

2. Water Management & Hygiene

- Water consumption can double or triple in summer, making it the primary vehicle for both cooling and potential infection.
- **Cool Supply:** Keep water temperature below 25°C. Use insulated pipelines or cover tanks with wet gunny bags to prevent heating from sunlight.
- **Sanitization:** Flush lines every 48 hours with hydrogen peroxide or organic acids to remove biofilms where bacteria like *E. coli* thrive.
- **Supplementation:** Add **electrolytes** (sodium, potassium, chloride) to maintain osmotic balance and **Vitamin C** (250-500mg/liter) to combat oxidative stress.

3. Feeding Practices

- Digestion generates metabolic heat, which can be fatal during the hottest parts of the day.
- **Timing:** Provide 60% of the daily ration before 8:00 AM and the remaining 40% after 6:00 PM. **Withdraw feed** entirely between 10:00 AM and 4:00 PM.
- **Nutrient Density:** Since birds eat less in heat, increase dietary energy using **fats/oils** (which have lower metabolic heat than grains) and boost levels of amino acids and minerals.
- **Additives:** Include **probiotics** (e.g., *Lactobacillus*) to maintain gut health and **antifungals** in feed to prevent mold growth in humid conditions.

4. Health & Vaccination Protocols

Heat stress causes immunosuppression, leading to increased outbreaks of **Newcastle Disease (ND)**, **Infectious Bronchitis (IB)**, and **Infectious Bursal Disease (IBD)**.

- **Vaccination Timing:** Only vaccinate during the **coolest hours** (night or early morning) to avoid compounding heat stress.
- **Biosecurity:** Maintain strict control over visitors and equipment. Ensure wild birds and rodents—which carry summer-prevalent diseases like **Avian Influenza** and **Salmonella**—cannot enter the shed.
- **Monitoring:** Use serological tests (like ELISA) to monitor antibody titers, as they often drop during summer months.

Conclusion

Summer poses major health risks to poultry due to intense heat stress, immunosuppression, and high pathogen growth, often causing mortality, reduced feed intake, and poor egg quality. Common threats include necrotic enteritis, coccidiosis, and infections like Salmonella and Fowl Cholera. Key management involves providing clean water, proper ventilation, and shade.

***Prof. Dr. R.N. Sreenivas Gowda,**

Former and Founding VC,KVAFSU, Bidar, Former Director, IAH&VB, Bangalore, Former Prof and University Head, Dpt. Of Pathology, Veterinary College, UAS, Bangalore

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ARTICLE

Industrial Poultry Respiratory Challenges

Critical Early Detection Protocols

Dr. Akash Wadal, M.V.Sc (Animal Nutrition)

Respiratory problems in chickens often begin subtly but can devastate flocks if not addressed early, making prompt recognition crucial for poultry managers, especially in hatchery operations.

- Core early signs include sneezing, coughing, wheezing starting in one or two birds, nasal or ocular discharge that turns frothy or pus-like, open-mouth breathing, tail-bobbing, head shaking, neck extension, and gurgling/rattling sounds signaling upper or lower tract irritation.
- Subtle behavioral clues feature lethargy, reduced appetite, birds isolating or huddling near heat, comb/wattle discoloration (pale or dark), facial swelling, and rapid drops in feed intake or egg production in layers/growers.
- Environmental triggers like poor ventilation, high ammonia from wet litter, dust, overcrowding, temperature swings, poor nutrition, or parasites weaken immunity, inviting pathogens such as Mycoplasma viruses.
- Common causes encompass Chronic Respiratory Disease (CRD) from Mycoplasma gallisepticum with rales/discharge, infectious bronchitis or laryngotracheitis causing gasping/moist coughs, infectious coryza with foul facial swelling, gapeworm gaping, and secondary bacteria.
- Hatchery risks include brooder pneumonia from chilling/aspiration (shivering/gasping), rare post-hatch vaccine reactions, and subtle sneezes in day-olds during transport/placement.
- Prevention demands 60-70% humidity, optimal temps (95°F week 1 chicks, dropping 5°F weekly), dry litter, all-in-all-out biosecurity, disinfectants, ventilation under 20ppm ammonia, SOP vaccinations, and quarantines.
- For quick response, isolate suspects to halt air/droplet spread, offer warmth/electrolytes/supportive aids like VetRx vaporizers, await vet antibiotics (e.g., tylosin for CRD), and necropsy for diagnosis—ignoring risks 10-20% morbidity

Why Respiratory Problems Are Dangerous

- Respiratory problems in poultry should never be taken lightly, as they spread quickly and cause serious economic losses if ignored. What begins as mild sneezing or coughing can rapidly develop into major infectious diseases affecting the entire flock. Common respiratory-related diseases include Chronic Respiratory Disease (CRD), Infectious Bronchitis, Newcastle Disease, and Colibacillosis, all of which can severely damage bird health and farm profitability.

Immediate Actions

Action	Steps to Take	Why It Works	Expected Impact
Isolate affected birds	Move suspects to separate quarantine area with clean bedding, water, feed; limit access to 1 handler in PPE. Monitor 24/7.	Breaks airborne/fecal-oral transmission chains; one bird can infect 100+ via droplets in hours.	Halts 80-90% of flock spread within 48 hrs; buys time for diagnosis.
Improve ventilation (without drafts)	Adjust fans to 0.1-0.2 cfm/sq ft; target 10-15 air changes/hr. Avoid direct bird drafts >5 mph.	Dilutes aerosols, CO2, pathogens; stabilizes temp/humidity at 65-75°F, 50-60% RH.	Reduces ammonia by 50%, cuts new cases by 60%; prevents stress chills.
Reduce dust and ammonia	Test ammonia (>20ppm dangerous); rake litter, add lime/superphosphate if >25ppm. Use oilers on feathers if dusty.	Dust carries bacteria; ammonia burns mucosa, weakens immunity (threshold 25ppm for chicks).	Lowers irritation signs (sneezing) by 70%; improves oxygen uptake immediately.
Check litter moisture	Squeeze test: should form ball but crumble easily (20-25% ideal). Add dry shavings if wet.	Wet litter breeds E.coli, Salmonella; spikes ammonia 3x.	Prevents footpad dermatitis, cuts secondary infections by 40%; dries in 24 hrs.
Consult a veterinarian	Collect swabs (trachea), fresh necropsy; request PCR for Mycoplasma / IBV/ND.	Confirms CRD vs. viral (e.g., bronchitis drops eggs 50%); guides antibiotics (tylosin/doxy).	Accurate Rx cuts mortality 50-75%; avoids resistance from blind treatment.
Strengthen biosecurity	Footbaths, vehicle sprays, all-in-all-out, wild bird netting, rodent bait. No visitors.	Blocks vectors (rodents carry Mycoplasma, birds shed NDV); entry points = 70% outbreaks.	Prevents reintroduction; sustains flock health post-recovery.

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- When respiratory infections spread, birds experience poor growth, reduced feed intake, and weak immunity. This leads to poor feed conversion ratio (FCR), uneven flock growth, drop in egg production, and increased medication costs. In severe outbreaks, mortality can rise sharply, causing heavy financial loss to the farmer.
- Respiratory diseases spread through air, dust, water, equipment, and direct bird-to-bird contact. In a closed poultry shed, even one infected bird can quickly transmit infection to the entire flock within a short time. Early detection and immediate action are therefore critical to protect bird health and maintain farm performance.

Common Signs of Respiratory Problems in Chickens

Sign	What You Observe in Birds	What It Indicates	Why It Happens	Risk Level
1. Coughing or Sneezing	Frequent sneezing, coughing, or throat clearing sounds	Early respiratory infection or irritation from dust/ammonia	Infection or irritation inflames the respiratory tract causing birds to expel mucus and irritants	Early warning-monitor immediately
2. Nasal Discharge	Wet nostrils, sticky mucus, yellow/green discharge	Viral or bacterial respiratory disease such as CRD or Coryza	Infection causes mucus buildup in nasal passages and sinuses	Moderate to high risk depending on spread
3. Decreased Activity	Birds appear dull, inactive, sit more, reduced movement	Infection, stress, fever, or low oxygen	Reduced oxygen and fever lower energy levels and activity	Early to moderate stage indicator
4. Ruffled Feathers	Birds fluff feathers and look weak or depressed	General illness, discomfort, or fever	Birds conserve body heat and energy during sickness	Early sign of health problem
5. Loss of Appetite	Reduced feed and water intake, uneven growth	Disease progression and weakened immunity	Breathing difficulty and infection reduce hunger and metabolism	Economic loss begins at this stage
6. Cyanosis (Bluish Comb/Wattles)	Comb and wattles turn bluish or purplish	Severe oxygen deficiency and respiratory failure	Poor lung function reduces oxygen supply to blood	Emergency sign - very high risk
7. Open-Mouth Breathing	Birds breathe with open beak and stretched neck	Severe respiratory distress or airway blockage	Lungs and air sacs cannot supply enough oxygen	Critical condition
8. Gasping for Air	Birds struggle to breathe, stretch neck repeatedly	Advanced respiratory infection or airway obstruction	Severe blockage or lung damage restricts airflow	Life-threatening stage
9. Pale Comb or Wattles	Comb becomes pale instead of bright red	Poor blood circulation, anemia, or chronic illness	Long-term oxygen deficiency and weakness reduce blood flow	Chronic disease indicator
10. Continuous Sneezing Fits	Repeated sneezing spreading in flock	Respiratory irritation or infectious disease spread	Ammonia, dust, or pathogens irritate respiratory lining	Early flock-level warning
11. Unusual Sounds (Wheezing/Gurgling)	Clicking, rattling, wheezing, or gurgling breathing sounds	Infection in trachea, lungs, or air sacs	Mucus and fluid accumulation in respiratory system	Strong diagnostic sign of respiratory disease
12. Drooping Wings	Birds hold wings downward, appear exhausted and weak	Severe respiratory stress and low oxygen	Lack of oxygen and energy causes muscle weakness and fatigue	Late and serious stage indicator

Final Message

- Respiratory problems don't shout—they whisper first.
- If you act at the first sneeze, you can prevent a full-scale outbreak.
- Healthy breathing means healthy birds, better growth, and higher profits

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Elevating Poultry Health with Hydroxy Trace Minerals

By : Dr Maloshrie Bora,
Program Manager (Trace Minerals), Trouw Nutrition South Asia

Trace minerals such as zinc, copper, and manganese are fundamental to poultry health, acting as cofactors in vital biochemical pathways: skeletal development, immune defenses, antioxidative systems, enzyme functions, feathering, and reproductive performance. Yet, the typical composition of feed ingredients often falls short of modern poultry standards. That's why precision mineral nutrition—providing the right mineral at the right time and in the right form—is essential to support optimal broiler growth, eggshell integrity in layers, and fertility in breeders.

While inorganic sources like sulfates and oxides have been staples for decades, they suffer from low bioavailability and reactiveness. These soluble compounds can prematurely release minerals, which then form insoluble complexes with phytate or binding agents in the gut, diminishing absorption and even degrading vitamins or enzymes in the premix. This not only reduces feed efficiency but also increases mineral excretion, raising environmental concerns. Organic (chelate) minerals improved this situation, but often at a premium cost and with variable potency. Enter the next generation: hydroxy trace minerals. Hydroxy trace minerals, like copper, zinc, and manganese hydroxychloride, represent the latest leap in mineral nutrition. Their crystalline, covalent structure is non-hygroscopic and non-reactive in feed and the upper gut. This structure allows slow, controlled release of minerals at the ideal intestinal absorption site, significantly improving bioavailability. They resist premature dissolution, ensuring minerals are released more slowly and absorbed where it matters most.

Research across poultry sectors consistently shows that hydroxy trace minerals outperform inorganic sources. Broilers fed hydroxy copper and zinc achieved 7-8% heavier carcasses and a noticeable boost in breast meat yield. In independent trials, hydroxy-supplemented flocks maintained or improved feed conversion ratios while using lower inclusion levels than sulfate-based diets . Moreover, in antibiotic-free or necrotic enteritis challenge models, hydroxy minerals reduced pathogen load and mortality, performing on par with ionophores. Layers also benefit: eggshell quality improves, feed remains stable longer (less oxidation), and FCR gains are consistent when inorganic Cu, Zn, Mn are replaced with hydroxy versions. Breeder flocks, too, see enhanced fertility and hatchability under precision hydroxy mineral regimes. Beyond performance, hydroxy trace minerals contribute to gut integrity and immune defense. Broilers on hydroxy mineral diets exhibited reduced cecal enterobacteria and maintained tight junction integrity, translating into healthier birds and better carcass quality.

Discover IntelliBond®: Precision You Can Trust

Among hydroxy trace mineral solutions, Trouw Nutrition's IntelliBond® stands out as a premium, thoroughly validated choice. Designed to optimize delivery of copper, zinc, and manganese, IntelliBond features:

- **High bioavailability and potency :** thanks to stable, covalent crystalline bonds that release minerals at the optimal intestinal site
- **Enhanced feed stability and nutrient preservation** : safeguarding enzymes like phytase and vitamins from degradation in premixes
- **Improved bird performance and economics** : with independent studies showing better feed conversion, heavier carcasses, superior egg output, and healthier flocks under stress .
- **Environmental sustainability** : with reduced inclusion rates and lower mineral excretion promoting cleaner production.
- **Unmatched versatility across poultry species and life stages** : including broilers, layers, and breeders—even under challenging conditions like heat stress or compromised hygiene. This adaptability has been validated across multiple trials and production environments.

Proven Performance Across Poultry Types

A Spanish study comparing hydroxy vs. sulfate-fed broilers at nutritional levels found that those receiving hydroxy minerals (IntelliBond C and Z) achieved 7.4% higher live weights, 7.7% heavier carcasses, and 16.1% breast meat yield, versus 15.3% in the sulfate group.

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Another Trouw Nutrition joint trial with the University of New England demonstrated improved bone integrity (tibia breaking strength) and breast meat zinc content in broilers fed 100 ppm IntelliBond Zn, with gut integrity maintained. In antibiotic-free commercial conditions, hydroxy copper-chloride combined with organic acids matched or exceeded the performance gains of feed antibiotics while improving egg weight, mass, and feed efficiency in layer hens. These findings highlight the ability of IntelliBonds to deliver consistent productivity gains across broilers, layers, and breeders—even under stress or antibiotic-free regimes. Trouw Nutrition India has been pioneering mineral-precision feeding. "Trouw Talks" events in Karnal and Hyderabad, unveiled IntelliBond's OptiSize® technology—highlighting uniform, stable crystals that protect premix integrity and animal performance. Trouw Nutrition's new premix plant near Hyderabad supports local production of trace minerals, vitamins, and specialized premixes—readying India for advanced feed solutions. This investment and local research infrastructure underline Trouw Nutrition's strong commitment to validating hydroxy mineral efficacy under Indian production conditions.

Why IntelliBond® Stands Out

Developed over two decades and backed by 200+ global trials, IntelliBond® hydroxy trace minerals ensure predictable delivery and dependable results through:

- Superior bioavailability due to controlled release and crystalline stability
- Enhanced feed stability, maintaining vitamins, enzymes, and reducing oxidation in premixes
- Animal performance gains, improving carcass weight, egg production, feed conversion, and profitability
- Gut health, by reducing pathogenic bacteria and preserving gut barrier integrity in broilers
- Environmental responsibility, lowering mineral excretion while supporting sustainability-focused operations

Precision Manufacturing and Traceability

Trouw Nutrition's OptiSize® technology guarantees uniform particle size and non-hygroscopic behavior. Its low reactivity protects feed integrity, while rigorous traceability—from raw material origins to lot distribution—ensures feed safety and compliance.

Modern poultry production demands precision: the right trace mineral, in the right form, at the right level. Hydroxy trace minerals—especially IntelliBond®—deliver on that promise. Scientific evidence and Trouw Nutrition's local investments prove that these superior minerals enhance productivity, welfare, and sustainability in broilers, layers, and breeders. By choosing IntelliBond®, nutritionists and producers gain a trusted, research-backed solution that fosters better performance, protects investments, and advances poultry industry goals in India and beyond.

EVENT CALENDER

APRIL 2026

VIV SELECT INDIA

22-24 APRIL 2026

Venue : Yashobhoomi Convention Centre, Delhi, Sector 25, Dwarka, New Delhi- 110077
Contact Person : Mr. Rajeevan Vattakat
Phone : +91 98100 33187
Email : Rajeevan@sphereconnect.in
Web : www.india.viv.net

JUNE 2026

VIV EUROPE 2026

2-4 June 2026

Venue : Jaarbeurs, Utrecht, The Netherlands
Contact Person : Ms. Natalie Taylor
Phone : +31 621 31 61 82
Email : natalie@vnueurope.com
Web : www.europe.viv.net

28-30 JUNE – MIDDLE EAST POULTRY EXPO

Venue : Riyadh, RICEC, Saud Arabia
Phone : +966542804924 / +966114824876
Email : info@mep-expo.com
Web : www.mep-expo.com

JULY 2026

13-17 JULY – WORLD'S POULTRY CONGRESS

Venue : Metro Toronto Convention Center, Toronto, Canada
Phone : +1-416-585-8120
Email : info@wpc2026toronto.com
Web : www.wpc2026toronto.com

AUGUST 2026

4-6 AUGUST – SIAVS

Venue : Anhembi District - São Paulo - Brazil - Av. Olavo Fontoura, 1209
Phone : +55 (11) 3095-3120
E-mail : siavs@abpa-br.org
Web : www.siavs.com.br

NOVEMBER 2026

25-27 NOVEMBER - POULTRY EXHIBITION

Poultry India Expo 2026 | Knowledge Day - 24th Nov. 2026
Venue : HITEX Exhibition Complex, Hyderabad
Contact Person : Ms. Radhika
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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

Aviagen India Hosts Technical School 2026 in Hyderabad, Reinforcing Commitment to Customer Support, Knowledge Sharing and Innovation

Aviagen India successfully hosted the **Aviagen India Technical School 2026** on 9th and 10th February in Hyderabad for their customer team members bringing together global poultry experts, industry professionals and customer team members across the country.

The two-day technical forum served as a dynamic knowledge-sharing platform for improving the productivity in breeders and broilers covering health, incubation, technology advancements and management.

Talks delivered by Aviagen experts and industry professional globally representing genetics, applied physiology, nutrition, veterinary health and breeder services, including:

- **Santiago Avendano**, Global Vice President, R&D
- **Jens Lesuisse**, Global Product Director
- **Richard Bailey**, Head of Applied Physiology
- **Greg Hitt**, Regional Technical Manager - Asia
- **Scott Dawson**, Regional Technical Veterinarian
- **Michael ("Mike") Block**, Technical Service Manager
- **Jason Cormick**, Hatchery Specialist
- **Ruben Kriseldi**, Poultry Nutrition Specialist
- **Dr. R.V. Shantanavar**, Senior Technical Service Manager - Breeders
- **Dr. Sivakumar Duraisamy**, Senior Technical Service Manager - Health
- **Dr. Jayaraman**, Poultry Consultant

The sessions reflected an integrated approach to breeder and broiler performance, emphasizing the alignment between genetic potential and management requirements.

Driving Performance Through Science and Collaboration

Aligned with Aviagen's global core values — **Customer Success, Innovation, Integrity, and Continuous Improvement** — the Technical School reflected the company's ongoing commitment to delivering science-based solutions and practical insights to support customers in achieving excellent broiler results throughout the year.

The comprehensive agenda covered critical areas including:

Broiler breeder grading and feeding to peak, point-of-lay scoring for breeders, Embryonic requirements and incubation management, Feeding right particle size for broilers, Gut health management and its scoring, Immune-suppressive challenges and flock health optimization of broiler breeders, Pipped embryo testing at hatchery, Global R&D updates and Ross® 308 AP performance insights, Data-driven diagnostic breakout analysis at the hatchery.

Interactive quiz sessions and technical discussions ensured active participation, while reinforcing applied learning and field-level implementation.

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• Dr. Sumon Nag Chowdhury: +91 9051512590

Global Expertise, Local Impact

The Technical School featured distinguished global and regional speakers from Aviagen's technical, veterinary and research teams, including senior leaders from R&D, applied physiology, product management, nutrition, hatchery management and breeder services.

Their combined expertise highlighted Aviagen's integrated approach — connecting global research advancements with practical, region-specific solutions tailored for the Indian poultry industry.

Strengthening Industry Partnerships

By creating a collaborative environment for open dialogue and experience exchange, Aviagen India reaffirmed its commitment to long-term partnerships with customers. The event underscored the company's focus on:

- Supporting breeder and broiler performance optimization
- Enhancing biosecurity and flock health programs
- Leveraging global research for local productivity gains
- Building technical capability through continuous education

The Hyderabad edition of Technical School 2026 reflects Aviagen India's strategic priority of empowering customers with knowledge, tools and technical support necessary to sustain growth in a rapidly evolving poultry sector.

Commitment Beyond Genetics

Aviagen's philosophy extends beyond providing world-class breeding stock. Through initiatives such as Technical School 2026, the company demonstrates its dedication to:

- Responsible and sustainable poultry production
- Scientific advancement through global R&D
- Transparent and ethical business practices
- Developing people and strengthening industry capabilities

As the Indian poultry industry continues to expand, Aviagen remains steadfast in its mission to deliver balanced breeding programs that optimize bird welfare, performance efficiency and economic returns for customers.

The successful completion of Technical School 2026 marks another milestone in Aviagen India's journey of partnership-driven growth and technical excellence.

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Glorious Presence of Indian Herbs

at 12th Kolkata International Poultry Fair 2026, Kolkata from 11th To 13th February, 2026

INDIAN HERBS, the pioneer and market leader and **No.1 Company** in Herbal Animal Health Care Products Industry since 1951, participated in 2th Edition of Kolkata International Poultry Fair 2026 held in Biswa Bangla Exhibition Centre, New Town Kolkata from 11th to 13th February, 2026.

It was a proud moment for our team to showcase our products and connect with industry leaders, partners, and poultry professionals from across the country. The event provided an excellent platform to exchange ideas, understand emerging trends, and strengthen our relationships within the poultry fraternity.

Our stall received an encouraging response, and we truly appreciate everyone who visited us and shared their valuable time and insights.

We remain committed to supporting the growth and advancement of the poultry industry with innovative and quality-driven solutions.

Looking forward to many more such opportunities to connect and collaborate.








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1 Ltr and 5 Ltr

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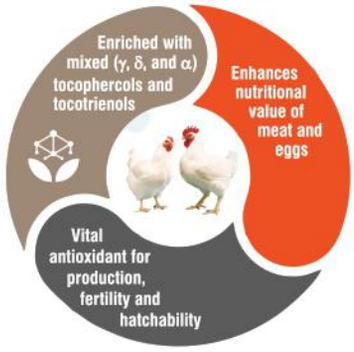
Natural vitamin E and organic selenium complex



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FEED INCLUSION RATE

100 gm per ton of feed or as advised by the poultry consultant

WATER INCLUSION RATE

E Sel POWER Liquid (per 1000 birds)

Broilers	Layers	Qty
0-2 weeks	0 - 8 wks	10 ml
3-4 weeks	9 -20 wks	20 ml
5th week & onwards	21-72 wks	40 ml

To be given orally, mixed with drinking water, once daily.
Double quantity is recommended for breeders.

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1 Kg, 10 Kg & 25 Kg
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Comprehensive Liver Care

Where Lipotropics Meet Phytogenic Power

Mrs. Yamini Sripal, Dr. Sushant Mhatre, Dr. J Bhattacharyya

Modern intensive poultry production systems require birds to perform at the upper limits of their physiological capacity. Rapid growth rates, improved feed conversion ratios (FCR), high egg output, and energy-dense diets impose substantial metabolic pressure on the liver — the central organ responsible for nutrient metabolism, lipid transport, detoxification, and immune modulation (Hermier, 1997; Julian, 2005). Under such conditions, hepatic resilience becomes a decisive determinant of flock productivity, health, and profitability. Conventional hepatoprotective strategies have historically focused on single lipotropic nutrients, primarily choline. While these interventions assist in lipid export, they often fail to address oxidative injury, inflammatory stress, mitochondrial dysfunction, and limitations in nutraceutical bioavailability (Zeisel & da Costa, 2009; Surai, 2014). Therefore, a multi-targeted hepatomodulatory strategy is required to sustain metabolic efficiency in modern production systems.

The Modern Metabolic Challenge

High-density, energy-rich rations — essential for maximizing ADG and FCR — frequently exceed the liver's lipid-processing capacity, predisposing birds to hepatic lipidosis and oxidative damage (Hermier, 1997; Whitehead, 2004). This metabolic overload contributes to increased reactive oxygen species (ROS) generation, mitochondrial dysfunction, and impaired immune competence (Surai, 2002).

Such disruptions increase susceptibility to secondary conditions including:

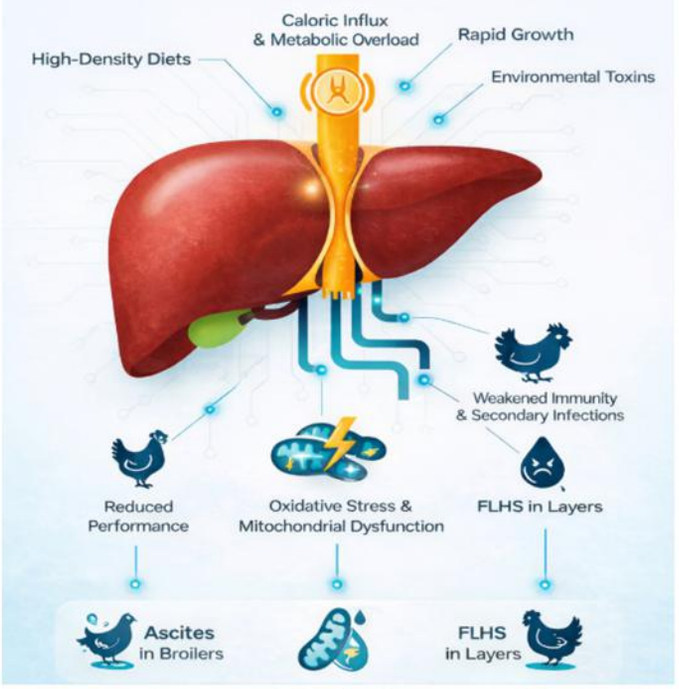

Fig 1: Modern metabolic challenge to poultry liver

- Ascites in broilers (Julian, 2005)
- Fatty Liver Hemorrhagic Syndrome (FLHS) in layers (Whitehead, 2004)
- Reduced resilience during toxin exposure, particularly aflatoxin B1 (Rawal et al., 2010)

Maintaining hepatic efficiency is therefore fundamental to sustainable poultry production.

Mechanism of Synergistic Lipotropics and Phytochemicals

Lipotropic agents play a central role in hepatic lipid metabolism by facilitating the mobilization and export of triglycerides from the liver. They promote phospholipid synthesis and very-low-density lipoprotein (VLDL) assembly, thereby enhancing lipid transport and preventing hepatic fat accumulation (Lakshmi & Padmaja, 2021; Zeisel & da Costa, 2009).

Phytochemicals, on the other hand, provide pleiotropic hepatoprotective effects by modulating multiple molecular pathways involved in oxidative stress, inflammation, and cellular signalling. Many plant-derived bioactive compounds activate antioxidant defence systems (e.g., Nrf2 pathway) and suppress pro-inflammatory mediators (e.g., NF-κB signaling), thereby protecting hepatic tissue from metabolic and toxin-induced damage (Surai, 2002; Almohmadi et al., 2024). The synergistic integration of Lipotropics and phytochemicals offers a dual-action approach — optimizing hepatic lipid metabolism while simultaneously strengthening antioxidant and anti-inflammatory defences.

Mechanistic Basis of Advanced Hepatoprotection

An integrated tri-phasic framework—Protection, Mobilization, and Optimization—provides comprehensive hepatic support by targeting cellular defense, lipid metabolism, and digestive efficiency simultaneously.

Phase I: Protection - Hepatocyte Defense and Regeneration

Oxidative stress and toxin exposure are primary drivers of hepatic injury in poultry (Rawal et al., 2010).

a) Silymarin (Silybum marianum extract)

- Potent antioxidant and free radical scavenger (Surai, 2002)
- Stabilizes hepatocyte membranes, limiting toxin penetration (Abenavoli et al., 2018)
- Stimulates RNA polymerase I activity, enhancing protein synthesis and hepatocyte regeneration (Polyak et al., 2013)

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b) Phyllanthus niruri

- Contains lignans such as phyllanthin
- Inhibits lipid peroxidation and preserves membrane integrity (Patel et al., 2011)
- Exhibits anti-inflammatory and hepatorestorative effects
- Activation of endogenous antioxidant pathways (e.g., Nrf2) and suppression of inflammatory signaling (e.g., NF-κB) collectively reduce hepatic oxidative burden (Surai, 2014).

Fig. 2: Modern metabolic challenge to poultry liver

Phase II: Mobilization - Lipotropic Support for Lipid Export

Hepatic triglyceride accumulation impairs metabolic efficiency and negatively impacts performance parameters (Hermier, 1997).

a) Choline sources and methyl donors (e.g., tricholine citrate, betaine)

- Support phosphatidylcholine synthesis
- Enhance VLDL assembly and triglyceride export (Zeisel & da Costa, 2009)

b) L-Carnitine

- Facilitates mitochondrial transport of long-chain fatty acids
- Enhances ß-oxidation and ATP generation (Rebouche, 2004)

c) Inositol

- Synergizes with choline in lipoprotein formation
- Reduces risk of fatty liver conditions in high-producing birds (Lakshmi & Padmaja, 2021)
- This coordinated lipotropic matrix promotes efficient fat mobilization, improved mitochondrial function, and enhanced feed efficiency.

Phase III: Optimization - Bioavailability and Digestive Efficiency

Sustained hepatoprotection requires efficient digestion and nutrient assimilation.

a) Piperine (Black Pepper Extract)

- Inhibits glucuronidation pathways
- Enhances systemic bioavailability of phytogenic compounds (Shoba et al., 1998; Srinivasan, 2007)

b) Capsicum and Ajwain oils

- Stimulate bile secretion and pancreatic enzyme activity
- Improve fat digestion and absorption of fat-soluble vitamins (Platel & Srinivasan, 2004)

c) Rosemary and Basil oils

- Provide secondary antioxidant defense
- Neutralize peroxyl radicals prior to systemic circulation (Nieto et al., 2018)
- Digestive optimization ensures improved nutrient utilization and sustained metabolic stability.

Production and Clinical Implications

Comprehensive hepatic support has been associated with:

- Reduced ascites-related mortality (Julian, 2005)
- Lower incidence of FLHS in layers (Whitehead, 2004)
- Improved recovery following aflatoxin exposure (Rawal et al., 2010)
- Enhanced feed conversion efficiency through improved lipid metabolism (Hermier, 1997)

Thus, multi-modal hepatoprotection strengthens metabolic resilience in high-performance poultry systems.

Conclusion

Metabolic persistence is central to sustaining productivity in modern intensive poultry production. A tri-phasic hepatoprotective strategy integrating antioxidant phytogenics, lipotropic mobilization, and digestive optimization provides a comprehensive framework for maintaining hepatic integrity and metabolic efficiency. By enhancing hepatocyte resilience, supporting lipid export, and improving nutrient bioavailability, advanced hepatomodulatory approaches promote consistent performance, improved feed efficiency, and long-term flock sustainability.

References:

Will be provided on request

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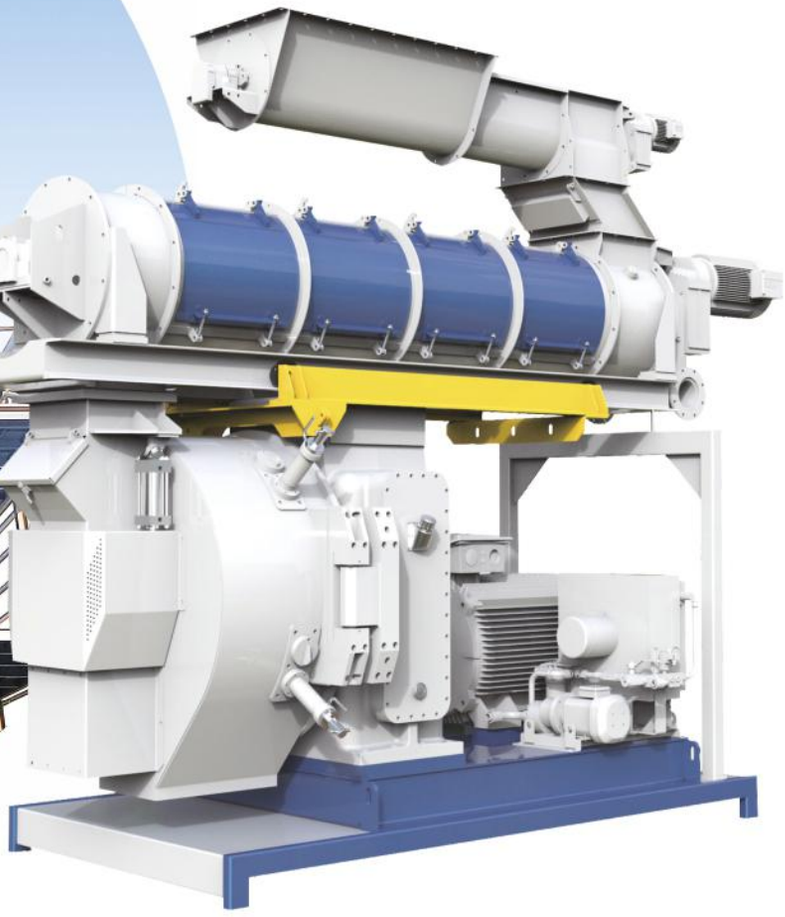

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IPEMA–Poultry India Showcases

Strong Global Presence at 2026, International Production & Processing Expo (IPPE), Atlanta, USA | 2026

IPEMA

IPEMA-Poultry India marked its significant presence at the 2026 International Production & Processing Expo (IPPE), Atlanta — one of the world's leading annual events for the food and protein industry. The expo was held from January 27-29, 2026, at the Georgia World Congress Center in Atlanta, Georgia.

The 2026 edition witnessed strong global participation, bringing together thousands of industry professionals and exhibitors across live production, processing, packaging, animal nutrition, sustainability, food safety, and emerging technologies. Organized by the U.S. Poultry & Egg Association, American Feed Industry Association, and the Meat Institute, IPPE continues to serve as a key platform for industry collaboration and knowledge exchange.

Amid this dynamic global platform, the IPEMA-Poultry India stand attracted strong footfall, drawing visitors from North & South America and Africa. Industry stakeholders expressed keen interest in participating in the upcoming 18th Edition of the Poultry India Expo 2026, acknowledging India's growing leadership in the global poultry sector.

The recent success of the 17th Edition of Poultry India Expo received high appreciation from international delegates. The expo's visibility has further expanded through coverage in leading international poultry magazines, creating strong global momentum ahead of the 18th edition.

Leadership Representation on the Global Stage

Representing IPEMA-Poultry India at IPPE 2026, Mr. Uday Singh Bayas, President, IPEMA-Poultry India, engaged actively with global poultry leaders, innovators, and industry decision-makers. Through strategic interactions and networking, he reinforced India's expanding footprint in global poultry innovation, technology adoption, and sustainable growth.

During IPPE 2026 in Atlanta, Mark Nathaniel Morris, President of the U.S. Poultry & Egg Association, shared his appreciation:

"Poultry India Expo in India has truly emerged as one of the most dynamic and influential platforms for the global poultry industry. I sincerely appreciate IPEMA and commend Uday Singh Bayas, President of IPEMA-Poultry India, for the remarkable job he has done in making the recent 17th Poultry India Expo a grand success.

The scale, professionalism, and international engagement at the event were impressive and reflect the strong leadership behind it. I would also like to appreciate the enthusiastic and vibrant delegation from India participating here at IPPE 2026 — your presence strengthens global collaboration.

I look forward to continued engagement and even greater participation from India at IPPE 2027."

Jonathan Cade, Board Member - U.S. Poultry & Egg Association and President - Hy-Line International, also shared his views during his interaction with Uday Singh Bayas:

"IPPE 2026 has truly been a tremendous show. With over 1,300 exhibitors and more than 662,000 square feet of exhibit space, it reflects the scale, strength, and global importance of our industry.

I sincerely appreciate the strong and vibrant delegation from India at IPPE 2026. This growing participation is a direct result of Indo-U.S. collaboration and the mutual efforts of both the IPPE organizers and the Poultry India organizers.

India is rapidly emerging as a strong economy and a significant consumer as well as producer of poultry products. We already see a great presence of Indian brands operating in the U.S., and this is only set to grow. We look forward to even stronger ties and greater mutual participation in the years ahead.

IPPE also plays a pivotal role in supporting the younger generation entering veterinary science and livestock sectors. What is earned from the show is meaningfully reinvested back into the industry through technical seminars, education initiatives, and research — strengthening the future of poultry and egg production globally."

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"India's poultry industry has evolved into a dynamic, technology-driven and globally competitive sector. Poultry India Expo today stands as a powerful platform connecting innovation, sustainability and international collaboration. We invite the global poultry fraternity to join us at the 18th Edition of Poultry India Expo 2026 and experience the scale, strength and opportunities that India offers."

— Uday Singh Bayas President, IPEMA-Poultry India

Invitation to the 18th Edition - World's Biggest Global Poultry Expo 2026

IPEMA-Poultry India extends a warm invitation to the global poultry community to participate in the 18th Edition of Poultry India Expo 2026, scheduled on:

25th, 26th & 27th November 2026 HITEX Exhibition Centre, Hyderabad, Telangana, India

Recognized as the World's Biggest Global Poultry Expo 2026, the upcoming edition promises expanded international participation, advanced technological showcases, high-level knowledge sessions, and unparalleled networking opportunities.

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- Broiler 1.5% Concentrates

Layer Concentrates:
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- Layer 10% Concentrates
- Layer 25% Concentrates
- Layer 35% Concentrates

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- Broiler Pre-Starter Crumbs
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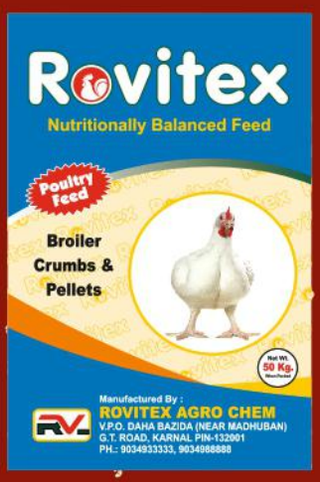

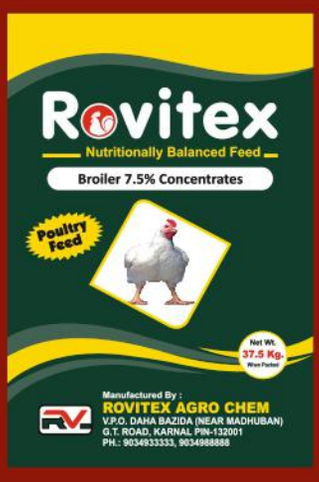

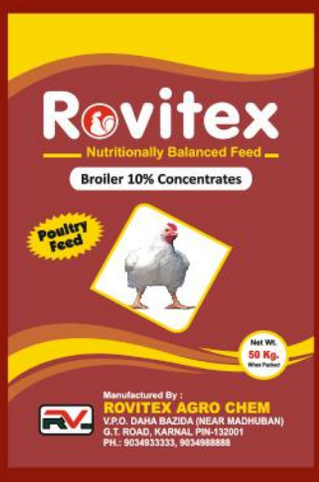

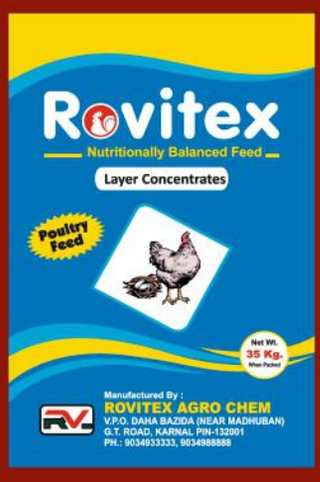

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7997994331-9 info@poultryindia.co.in poultryindia.co.in

18th EDITION

POULTRY INDIA®©

OUR INDUSTRY SHOW

25 26 27

Nov. 2026

1 Nation Expo

World's Biggest Global Poultry Expo 2026 @ Hitex, Hyderabad, Telangana, India

Highlights 2025

- **550+** EXHIBITORS
- **35,000 +sqm2** Display Area
- **50+** Global Companies
- **20+** Associations (Indian)
- **20+** Associations (Global)

Organised by: IPEMA

Uniting Global Poultry Leaders, Farmers & Innovators

Supported by | Media | Indian Magazine Partner | International Magazine Partners | Venue Partner

Supporting Associations

NECC · PFI · CLFMA · AIPBA · INFFIH · PF&BA · APPF · TMBCC · KPFBA · WBPF · TPF · PBA(TELANGANA) · NIBBA · Vets In Poultry (VIP) · All Rajasthan Poultry Farmers Society

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COURSE DURATION:
May 4 – May 29, 2026
LAST DATE TO REGISTER: April 26, 2026

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OFFERED BY THE SOY EXCELLENCE CENTER (SEC) – INDIA

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WHAT YOU LEARN

1. Basics of feed manufacturing
2. Receiving and sampling for feed ingredients
3. Quality assurance and control
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5. Batching and mixing system, premixing
6. Pelleting including cooling and crumbling
7. Liquid applications
8. Extrusion process including drying and cooling
9. Finish feed load-out
10. Animal nutrition for feed manufacturing
11. Maintenance

900+
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- Does NOT require prior formal feed milling education

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WHAT YOU GET

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MEET YOUR INSTRUCTORS

YOUR INTERNATIONAL EXPERTS

DR. CARLOS CAMPABADAL

Faculty Member, Department of Grain Science and Industry, Kansas State University

Dr. Carlos Campabadal is a faculty member at the Department of Grain Science and Industry at Kansas State University focusing his work on the International Grains Program Institute (IGP) as an extension specialist and leader focused on outreach in the areas of grain storage, quality and processing, U.S. grain grading, export systems, and feed manufacturing. He conducts applied research in stored product protection focusing on grains, oilseeds and its co-products. He is active in international development with several projects with USAID and USDA in Central America and in Africa. He was born and raised in Costa Rica, Central America.

He obtained his doctoral degree in Agricultural and Biological Engineering from Purdue University focusing on Stored Product Protection and was a part of the Post-Harvest Education and Research Center (PHERC). He obtained his master's degree in Agricultural Engineering at the University of Illinois focused on grain processing. Before, his graduate studies and after obtaining a B.S. degree in Mechanical Engineering from the University of Costa Rica, he worked in his family feed mill company for three and a half years as a process and maintenance engineer. His previous experience includes animal farm management in beef cattle and swine farms. Dr. Carlos has travelled throughout Latin America, Africa, Asia, and Europe as a technical consultant, and speaker in more than 35 countries and 50 short courses and seminars in the areas of grain storage and feed manufacturing for U.S. Grains Council, U.S. Soybean Export Council, U.S. Wheat Associates, USDA, WISHH, World Bank, and private companies. He has also presented his research at several scientific and professional conferences, and has several publications in scientific journals. He is still involved in his family feed manufacturing and farm business operations.

DR. WILMER JAVIER PACHECO

Extension Specialist and Associate Professor, Department of Poultry Science, Auburn University

Dr. Wilmer Pacheco was born in Honduras where he obtained a BS in Food Science in 2005. Shortly after graduation, Dr. Pacheco began a feed mill manager training program with Murphy Brown, LLC in Laurinburg, North Carolina where he was responsible for overseeing the production of approximately 10,000 tons of pellet feed per week. In June 2009, Dr. Pacheco was awarded a fellowship in the Department of Poultry at North Carolina State University, where he earned his Master's in Poultry Science and his Ph.D. in Physiology and Nutrition. Currently, Dr. Pacheco is an Associate Professor and Extension Specialist at Auburn University in the State of Alabama. His research activities are focused on understanding the interrelationships between feed processing and nutrition on broiler performance. Additionally, Dr. Pacheco conducts research on nutrition strategies to reduce production costs, improve broiler performance, and nutrient digestibility. Dr. Pacheco is lead or supporting author of 32 research articles and 88 news articles primarily in Feedstuffs magazine, which is the leading source of news for animal agriculture in the United States with 12,500 accredited subscribers. Dr. Pacheco has been invited to give more than 165 presentations in 16 countries, has served as chair or member of 25 graduate student committees, and has mentored 21 visiting scholars from 12 countries.

YOUR WEEKLY CHECK-IN NATIONAL EXPERT

MR. MEENAKSHISUNDARAM KANAGARAJ

Consultant

Mr. Meenakshisundaram Kanagaraj is a freelancing consultant, technical trainer, and speaker on feed milling. He holds a Post Graduate Diploma in Digital Instrumentation and a Bachelor's degree in Physics. He has worked for an instrumentation company, an auto ancillary components manufacturer, and a multinational animal feed additive manufacturer. He has successfully completed a course on Lean Six Sigma Black Belt by the American Society for Quality (ASQ) and a course on Fundamentals of Feed Milling Technology conducted by the American Feed Industry Association (AFIA). As a consultant, he is involved in new feed mill projects from design to commissioning. He has helped feed milling organizations improve quality and productivity.

What SEC Members Have to Say

Dr. Vaibhav Deshmukh
Assistant General Manager
Venkateshwara Hatcheries Pvt. Ltd.

"The SEC India Poultry Production & Management Course was a very enriching learning experience for me. It helped me strengthen my understanding of poultry production while also giving me practical insights that are useful in day-to-day professional work. The sessions were interactive and provided a great opportunity to learn from industry experts as well as connect with fellow professionals. I especially appreciated how the course combined theoretical knowledge with practical industry applications. Overall, the program enhanced my confidence and analytical thinking. I would certainly recommend this course to anyone in the poultry industry who wants to update their knowledge and grow professionally."

Dr. Gajanan Solanke
Technical Executive (TE)
Virbac Animal Health India Pvt. Ltd.

"The SEC India Poultry Production & Management Course significantly enhanced my technical knowledge in poultry production, nutrition, and disease management. The course was very well structured, and the experts explained the topics clearly with practical examples, making the sessions highly informative and easy to understand. I particularly valued the insights into poultry nutrition, soybean meal utilization, and the importance of biosecurity and farm management in improving flock productivity. The training provided strong practical understanding that can be directly applied in field conditions. I would definitely recommend this course to poultry professionals seeking practical and industry-relevant knowledge."

Venworld Strengthens Poultry

Nutrition Awareness Through Technical Seminar Series Across Hyderabad, Bengaluru And Hosapete

Venworld successfully organized a series of high-impact technical seminars at Hyderabad,Hosapete and Bengaluru from 20th January 2026 to 23rd January 2026. The seminars witnessed enthusiastic participation from poultry farmers, integrators and industry professionals, reflecting the growing interest in advanced nutritional strategies and performance-oriented feed solutions. These knowledge-driven events reinforced Venworld's long standing commitment to empowering poultry farmers through research-backed nutrition, technical education, and strong field level support, helping them to improve productivity, profitability and sustainability.

Technical seminar was conducted under the initiative of Venky's Oil Seed Division, with the central theme "Digestible Protein and Its Impact on Poultry Performance." Following the introductory remarks, Dr. Sunil Nadgauda (DGM - Technical) delivered an in-depth and practical presentation on the role of protein nutrition in poultry performance. He discussed various crude protein sources and their influence on growth and overall bird health, explaining that poultry performance depends not merely on crude protein levels but on the digestibility and bioavailability of amino acids supplied through dietary protein sources.

Empowering Poultry Farmers With Technical Knowledge

Mr. Deepak Khosla, General Manager - Sales & Marketing, Venworld, delivered the introductory session, providing an overview of the current poultry industry scenario, including key challenges, emerging market trends, and upcoming innovations shaping the future of poultry production. His address set the context for the technical sessions and reinforced Venworld's continued focus on supporting farmers through knowledge-driven solutions.

Dr. Nadgauda emphasized that precision nutrition begins with the selection of the right protein source and a clear understanding of how efficiently birds utilize nutrients. Special emphasis was placed on high-quality soybean meal, which remains the backbone of poultry protein nutrition due to its balanced amino acid profile, high digestibility, and consistency. He elaborated on how digestible lysine, methionine, threonine and tryptophan directly influence muscle development, growth rate, feed conversion ratio (FCR), immune response, gut health and overall flock uniformity - key parameters for sustainable and profitable poultry production. Farmers were guided on optimizing protein utilization across all growth phases from starter to finisher resulting in improved livability, consistent body weights and better FCR.

Dr. K. P. Kale, General Manager – Nutrition, interacted with farmers and shared insights on emerging trends in poultry nutrition aimed at improving bird performance while optimizing feed costs. He also addressed and clarified all nutrition-related queries raised by the farmers, providing practical and solution-oriented guidance.

The series also featured a technical session by Dr. K Padmavathi -Technical Sales Officer, focusing on Desimix 5% broiler composite premix and its role in effective broiler nutrition and management. She explained how a well-balanced premix supports optimal growth, feed efficiency, immunity and livability in broilers. The session provided practical guidance on incorporating Desimix 5% into feeding programs to address nutritional gaps, improve performance consistency, and manage broiler flocks more efficiently.

Venky's has been actively engaged in soybean processing since 1992 and currently operates soybean processing plants at Solapur, Nanded, and Shrirampur near Shirdi in Maharashtra. He emphasized that utmost care is taken during soybean processing to produce highly digestible and unadulterated soya DOC, ensuring a consistent supply of quality crude protein and amino acids for poultry nutrition.

The seminar series was conducted under the leadership of Mr. Deepak Khosla, General Manager – Sales & Marketing, and Dr. K. P. Kale, General Manager – Nutrition, with strong technical support from Dr. Sunil Nadgauda, DGM – Technical. Venworld expressed heartfelt appreciation to its dedicated sales and technical teams for their meticulous planning, effective coordination, and flawless execution of the programs across all locations. Special thanks were extended to Dr. N. Baburaj, Mr. Suneel Sharma, Mr. B. V. Reddy, Mr. R. D. Lokesh and Mr. M. Babu, along with their respective teams, whose collective efforts, field-level coordination and active involvement made the Hyderabad, Hosapete, and Bengaluru meetings highly successful. Venworld also extends sincere appreciation to its doctors and sales teams for their continuous support, technical guidance and active participation in making these knowledge-sharing initiatives meaningful and impactful for poultry farmers.

In another session, Dr. Roshan Sarode, Manager-Nutritional Services delivered an insightful presentation on layer management, productivity and sustained production through the Mixiblend approach. He emphasized that optimal layer performance is achieved through a balanced nutrition, management and uniformity throughout the production cycle. He highlighted the importance of maintaining body weight uniformity, nutrient consistency and balanced micro and macro-nutrition to achieve peak egg production, improved shell quality and extended flock longevity. He emphasized that layer uniformity is essential for production efficiency and profitability, explaining that the Mixiblend layer composite premix, with its proven results, helps ensure consistent nutrient intake and improved production performance. The topic generated strong interaction and discussion among participants during the seminars.

The interactive seminars helped participants develop a clearer understanding of protein quality assessment, soybean meal sourcing, layer and broiler nutrition and effective poultry management practices, while reinforcing the value of working with reliable nutrition partners like Venworld.

Through these knowledge-sharing initiatives, Venworld once again demonstrated its commitment to advancing poultry nutrition through science, innovation, and farmer-centric solutions. By highlighting the significance of digestible protein and high-quality soybean meal, Venworld continues to support poultry farmers in achieving consistent performance, improved profitability and long-term sustainability.

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- Raw Material Matrix Calculation
- Data Management & Performance Analysis

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For stronger shell & bones

BROKEN OR DOWNGRADED EGGS	STRENGHTENING OF BONE FRAMEWORK	EXTENSION OF LAYING PERIOD
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The Significance of Betaine in Enhancing Poultry Performance Under Tropical Conditions

By Inge Peeters, Sopaphan Pruekvimolphan

Poultry producers in Asia face challenging environmental conditions, characterized by high temperatures and humidity. Nutrition plays a crucial role for maintaining performance and profitability under these circumstances, and betaine has become an increasingly valued solution in tropical poultry systems.

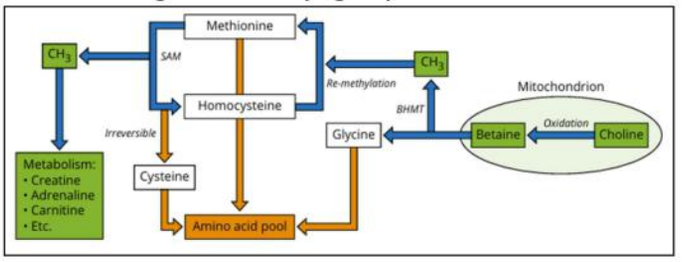
Understanding Betaine and Its Role

Betaine, also known as trimethylglycine, is a naturally occurring compound found in sugar beet, wheat, and marine sources. In poultry nutrition, it is valued for its dual function as a methyl donor and an organic osmolyte. These properties make betaine particularly relevant for Asian production systems, where heat stress is not seasonal but a year-round challenge.

As a methyl donor, betaine supports essential metabolic processes in the liver, including methionine regeneration and lipid metabolism. This function helps improve nutrient efficiency and supports liver health, which is critical for both fast-growing broilers and high-producing layers. At the same time, betaine acts as an osmolyte, helping cells retain water and maintain normal function during heat stress and dehydration.

Betaine can replace both choline and methionine (partially) in poultry diets because it directly supplies methyl groups, a role otherwise fulfilled by choline (after its conversion to betaine in the liver) and methionine through the methionine cycle (Figure 1). Unlike choline, betaine does not require metabolic conversion to become active, making it a more efficient methyl donor. This methyl contribution provides a methionine-sparing effect, allowing more dietary methionine to be used for protein synthesis. Practical broiler trials with betaine have shown that partial replacement of choline chloride and DL-methionine can be achieved without compromising growth, while often improving feed conversion and gut health.

Figure 1. Methyl group metabolism



Broiler Performance in Hot Climates

Heat stress remains a significant challenge in Asian poultry production. Extended periods of elevated temperatures compromise gut integrity, elevate oxidative stress, and impair immune function. Betaine supports cellular hydration and stabilizes cell membranes, enabling birds to better withstand thermal stress.

Under hot and humid conditions, birds decrease feed intake and redirect energy toward cooling mechanisms such as panting. The inclusion of betaine reduces the metabolic energy required for maintaining cellular balance, thereby permitting greater allocation of nutrients for growth and development. Birds supplemented with betaine during heat stress typically show enhanced resilience and more consistent performance.

A broiler study conducted under hot environment (27-36°C) in India with a supplementation of betaine hydrochloride at 0.13% and 0.20% on top of a negative control (with reduced choline chloride and methionine). Betaine significantly reduced respiration rate (panting: Figure 2) and rectal temperature at 21 and 28 days of age ($P < 0.05$) and remained numerically lower at 35 days of age. Both betaine-fed groups had a significantly higher final body weight ($P < 0.05$: Figure 3).

Figure 2. Respiration rate (breaths/minute)

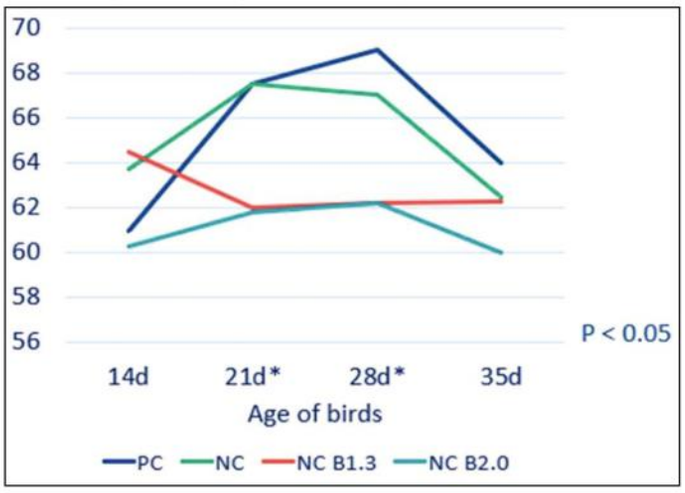
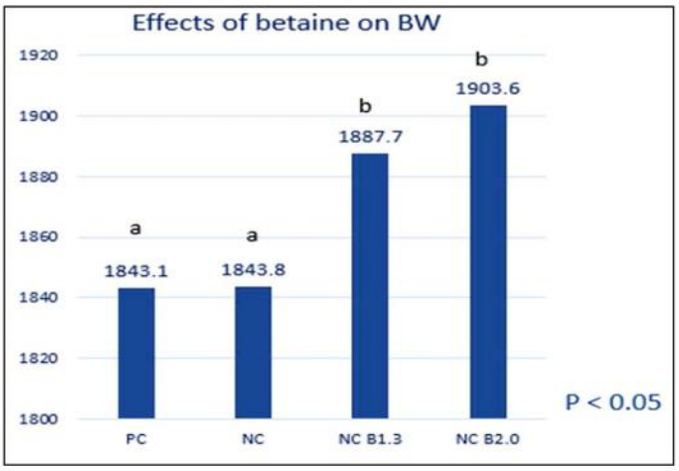


Figure 3. Final bodyweight at 38 days of age, grams



PC: Positive control

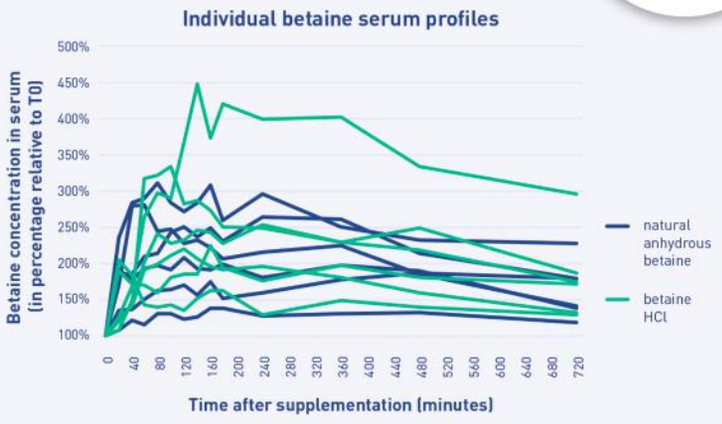
NC: Negative control (choline chloride and methionine were partially removed)

Beta-Key - efficient methyl donor in all animal species

Excential Beta-Key HCl and **Excential Beta-Key Anhydrous,**

Orffa's excellent sources of betaine

ORFFA



Individual profiles of the relative increase in the betaine level in the serum of pigs, after supplementation with betaine HCl (green lines) or natural anhydrous betaine (blue lines), show high variability.

- Unique free flowing characteristics
- Highest purity with consistency
- Methyl donor, replacing choline and partially methionine
- Osmoregulation and protective effects during heat stress
- Proven efficacy in several animal species

NC B1.3: Negative control with betaine 1.3 kg/MT feed

NC B2.0: Negative control with betaine 2.0 kg/MT feed

Improved broiler intestinal health was demonstrated in significantly lower litter and footpad lesion score in broiler group received 0.1% Excential Beta-Key on top of basal diet. Feed conversion ratio (FCR) improved by 6 points at 28 days of age and 2 points at 42 days of age. Based on literature review, supplementation of poultry diets with 0.04–0.15% betaine consistently increases breast, carcass yield and dressing percentage, while reducing fat percentage and abdominal fat.

Benefits for Layers

Heat stress in layers results in reduced feed intake, lower egg production, and poorer egg quality. By improving nutrient utilization and supporting liver metabolism, betaine helps maintain egg output and feed efficiency during periods of thermal stress. Its role in lipid metabolism is particularly important in reducing the risk of fatty liver, a common issue in high-producing layers under hot conditions.

The effect of betaine on laying hens from 32 to 48 weeks of age exposed to chronic heat stress (CHS: 11:00 to 15:00, 38°C ± 1, 55-65% Relative Humidity (RH) for 3 consecutive days per week) was studied. Betaine supplementation (1 kg/MT) on chronic heat stressed group significantly improved body weight, laying rate, egg weight, and egg mass (Figure 4), as compared to those without betaine supplementation.

Why Excential Beta-Key Outperforms Other Betaine Sources

Although all approved betaine sources ultimately deliver the same active molecule in the bird, clear differences in physical quality, consistency, and handling performance determine how well a product works under practical Asian conditions. Excential Beta-Key distinguishes itself through a combination of reliability, stability, and technical assurance that many competing products cannot match.

- **Superior physical quality and flowability**

Excential Beta-Key hydrochloride (HCl) is non-hygroscopic and free-flowing, ensuring easy handling in humid tropical climates where other betaine HCl products often cake, clump, or create mixing issues. The controlled crystallization process secures stable behaviour in feed mills and on farms.

- **High purity and consistent analytical profile**

  Betaine analysis is technically complex. Excential Beta-Key maintains strict specifications for purity, moisture, ash, nitrogen, and chloride, preventing the variability or dilution sometimes seen in lower-grade products and ensuring predictable performance batch after batch.

- **Flexible formats for different nutritional needs**

  With both betaine HCl (72.4% betaine) and betaine anhydrous (96% betaine), the Excential Beta-Key range offers options suited for nutrientdense formulations, chloride-sensitive diets, or situations requiring the highest concentration.

- **Reliable and secure supply**

  While traditional betaine anhydrous from sugar beet processing is limited by seasonal availability and market fluctuations, Orffa provides both high-purity synthetic betaine HCl and anhydrous options, offering dependable supply without compromising quality and performance.

- **Regulatory confidence and technical support**

  Excential Beta-Key comply with European feed additive regulations and is OMRI-LISTED for organic production. The product is backed by strong technical data and practical field experience, ensuring consistent support in challenging climates.

Key Takeaways

As climate pressure intensifies and production efficiency becomes increasingly critical, solutions that strengthen birds at the cellular level are gaining value. Betaine may be a small molecule, but in Asia's demanding poultry environment, its impact can be substantial.

References available upon request

By Inge Peeters, Global Solution Manager - Feed Efficiency, Orffa Additives B.V., The Netherlands.
Sopaphan Pruekvimolphan, Technical Manager, Orffa (Thailand) Ltd.

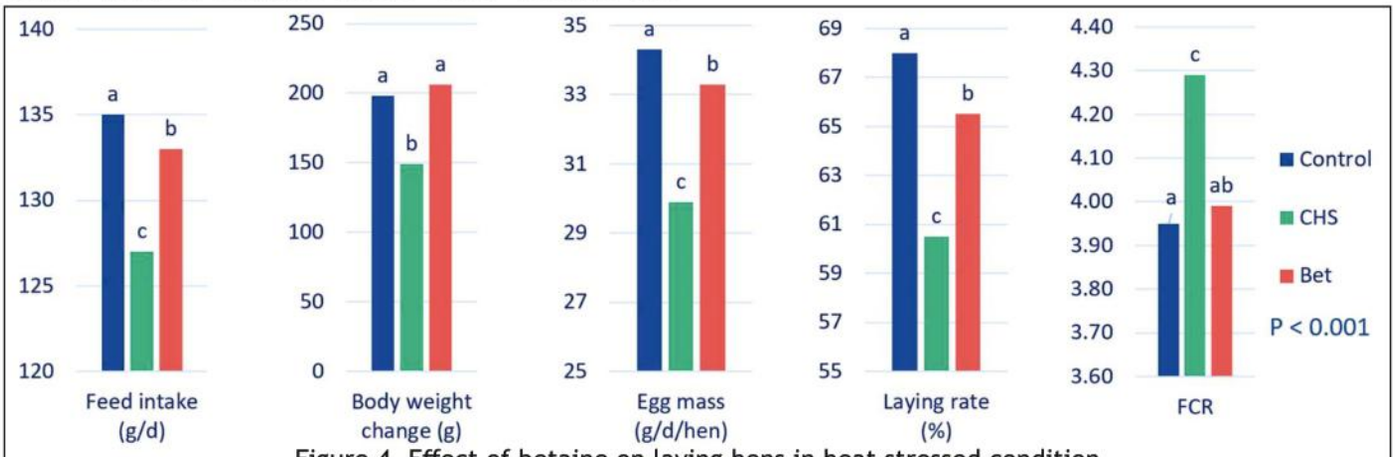


Figure 4. Effect of betaine on laying hens in heat stressed condition

Control: Normal temperature at 22-24°C and relative humidity (RH) of 45-55%
CHS: Chronic heat stress group at 38°C ± 1 and RH of 55-65%
Bet: CHS with betaine 1 kg/MT feed

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- **Nutrena 10% Pre-Starter / Starter / Finisher concentrates**
  To be used with soya and maize with inclusion rate 100 kg/Ton of complete feed.
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  To be used with soya and maize with inclusion rate 75 Kg/Ton of complete feed.
- **Nutrena 5% Pre-Starter / Starter / Finisher Concentrates**
  To be used with soya, maize and oil with inclusion rate 50 kg / Ton of complete feed.
- **Nutrena 3.5% Pre-Starter / Starter / Finisher Concentrates**
  To be used with soya, maize and oil with inclusion rate 35 kg / Ton of complete feed.
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- Nutrena 35% Grower / Layer Concentrates.

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- Nutrena 1% Broiler Starter / Finisher Concentrates with inclusion rate 10 kg / Ton of complete feed.
- And premixes as per requirement.

Layer

- Nutrena 5% Layer Concentrate with inclusion rate 50 kg / Ton of complete feed.
- Nutrena 1% Layer Concentrate with inclusion rate 10 kg / Ton of complete feed.

Broiler Breeder Super Concentrate

- Nutrena 1% Breeder Concentrate.

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Advanced Poultry Nutrition Forum 2026: A Landmark Gathering in Bangkok

Progressus
People Are Our Business

The **Advanced Poultry Nutrition Forum 2026**, organized by **Progressus**, concluded in Bangkok with resounding success. The one-day high-level technical forum brought together a distinguished audience of poultry nutritionists, technicians, feed formulators, suppliers, and production leaders. Through expert-led sessions and collaborative dialogue, participants explored cutting-edge advances in **genetics, nutrition, modern feed ingredients, and digitalization technologies**—reshaping the landscape of modern poultry production and setting new benchmarks for industry innovation.

Highlights from the forum included:

- **Unlocking Genetic Potential**: Experts shared strategies for aligning nutrition programs with the genetic capacity of modern poultry breeds. Precision feeding approaches were showcased as key to maximizing growth, health, and productivity while reducing environmental impact.
- **Precision Nutrition**: Sessions emphasized tailoring nutrient delivery to the specific needs of flocks, leveraging data-driven insights to optimize feed efficiency and animal performance.
- **Modern Ingredients**: Leaders explored innovations in feed ingredients, including novel proteins, functional additives, and sustainable alternatives, highlighting their role in enhancing gut health and meeting global demand responsibly.
- **Digitalization Technologies**: Cutting-edge tools such as sensor-based monitoring, AI-powered feed formulation, and real-time data platforms were presented as game-changers for flock management and resource optimization.

Beyond technical sessions, the forum provided a **dynamic networking platform**, fostering collaboration and partnerships that will accelerate the adoption of advanced strategies and drive industry growth.

The event's success reaffirmed that the future of poultry production lies in **precision nutrition, modern ingredients, and digital innovation**—ensuring that genetic potential is fully realized and sustainability goals are achieved.

The **Advanced Poultry Nutrition Forum 2026** was made possible through the outstanding collaboration of leading industry partners. **Progressus, Ecolex, Orffa, Datacor, Innotuc, H&N International, and Aviagen** joined forces to support this one-day high-level forum in Bangkok, ensuring its success and impact. Their contributions not only enriched the program but also underscored a shared commitment to advancing poultry nutrition and production worldwide. Together, these companies played a pivotal role in delivering cutting-edge insights, fostering dialogue, and strengthening the industry's collective drive toward innovation and sustainability.

Progressus is a specialized agribusiness training and talent development organization, headquartered in Bangkok, Thailand, with a strong focus on the **livestock, poultry, aquaculture, and pet food industries**.

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Petersime's new X-Streamer™ brings incubator intelligence and performance to the next level. The X-Streamer™ is the first intelligent incubator that turns data into maximum hatchery performance. It knows which eggs are on board and uses this knowledge to help you maximise incubation performance, while minimising operational costs.

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Progressus mission is to empower professionals and businesses by providing **technical education, leadership development, and industry networking opportunities.**

Key aspects of Progressus:

- **AgriSchools**: They run short, intensive technical courses (e.g., poultry nutrition, broiler breeder management, aquaculture feed milling) designed to upskill industry professionals.
- **Regional Focus**: Progressus is deeply embedded in the Asia-Pacific agribusiness ecosystem, leveraging extensive networks to connect experts, companies, and producers.
- **Talent Development**: Their programs emphasize both technical expertise and professional growth, recognizing that people are the most valuable asset in agribusiness.
- **Event Organization**: They are behind high-level forums such as the **Advanced Poultry Nutrition Forum**, which convenes senior leaders to discuss innovation, sustainability, and future strategies in poultry production.

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To the Guardians of Food and Health –

Every day, veterinarians and animal-health professionals stand at the frontline of global nutrition.

You safeguard animal welfare, ensure food safety, and uphold the delicate balance between animal health and human well-being. At EW Nutrition, we are proud to walk alongside you.

Your dedication fuels our mission to advance gut health, improve feed quality, reduce antimicrobial use, and support sustainable, responsible food production. On World Veterinary Day, we honor your expertise, your commitment, and your vital role as guardians of food and health.

Thank you for the science you uphold, the compassion you practice, and the trust you build – animal by animal, farm by farm.

Together, we nurture a future where animals thrive, food is safe, and communities grow stronger.

EW Nutrition

ew | nutrition

Thank You.

Happy World Veterinary Day 2026

Hy-Line introduces Nova-Tech's latest hatchling support technology to support its parent stock customers in India

New hatchery technology strengthens chick quality, welfare, and consistency from the start.

At the International Production & Processing Expo (IPPE) 2026 in Atlanta, **Hy-Line International announced the signing of a new contract for advanced hatchery technology to its operations in India, Hy-Line Layers Private Ltd. (Hy-Line India).** The agreement was signed by Jonathan Cade, President of Hy-Line International and Mr. Landon Fries, President of Nova-Tech Engineering, LLC, for the supply of Nova-Tech's latest Hatchling Support System.

The technology will be implemented to support Hy-Line parent stock customers in India. The Hatchling Support System features advanced infrared beak treatment (IRBT) technology and an automated injection system designed to deliver precise and consistent early-life care. This investment underscores Hy-Line's ongoing commitment to innovation in poultry breeding and hatchery management.

By integrating advanced, hatchery-based solutions at the parent stock level, Hy-Line aims to support its customers such as Srinivasa Farms by providing breeding stock without the headache of beak trimming and early vaccination. Furthermore, the system is more welfare friendly and less stressful for the chicks.

Infrared beak treatment leaves no open wounds, significantly reducing the risk of infection, disease and mortality associated with bird-on-bird aggression. Automated injection ensures accurate and uniform delivery of early-life treatments, supporting improved chick quality and consistency from the start.

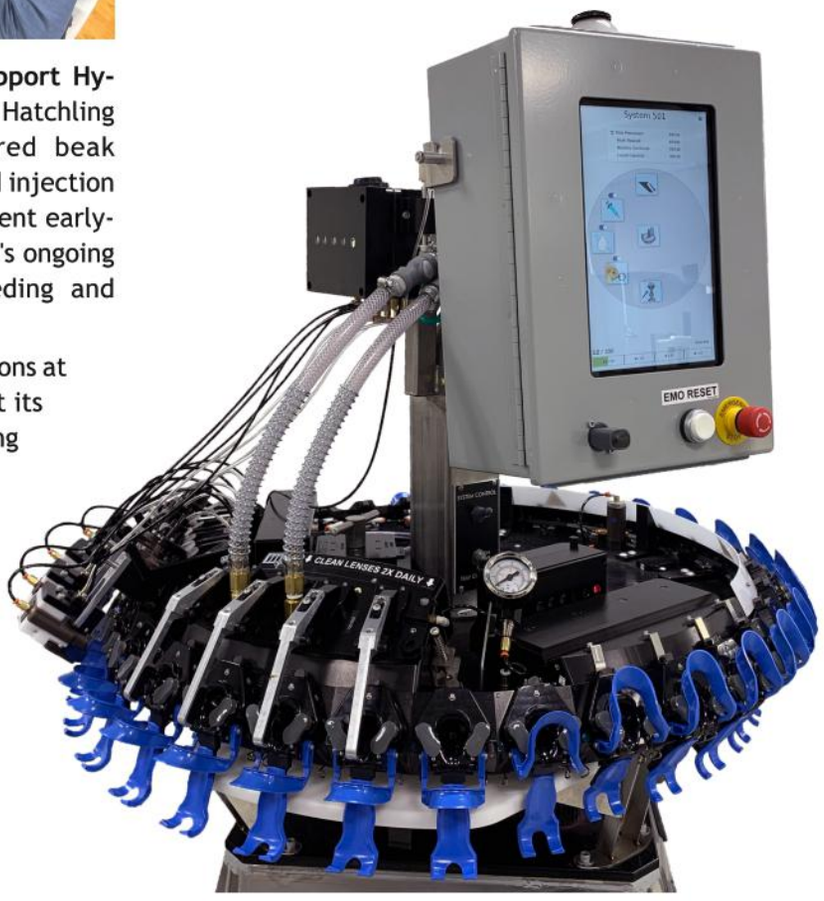
In addition, performing these procedures at the hatchery enhances overall biosecurity by eliminating the need for routine on-farm trimming and reducing the movement of personnel and equipment between farms.

"This investment reflects our focus on supporting our customers with practical, science- based hatchery solutions," said Jonathan Cade, President of Hy-Line International. "By working closely with our customer, Srinivasa Farm and supplier Nova-Tech Engineering, we are pushing forward with proven initiatives that will strengthen the supply of high-quality day-old parent breeding chicks".

About Hy-Line International

Hy-Line International is the world's oldest layer genetics company and a global leader in the development of high-performing laying hens. Founded in 1936 and headquartered in Dallas Center, Iowa, USA, Hy-Line is committed to scientific excellence, innovation, and supporting egg producers worldwide with robust, efficient, and sustainable layer genetics.

For more information, **visit www.hyline.com**



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1 Data on file, Study Report No. B815R-US-18-A46, Zoetis Inc.

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PVS Group India Expands Global Footprint in Animal Healthcare with World-Class Manufacturing and R&D

PVS Group India, one of the **largest manufacturers and exporters in the poultry, veterinary, and aquaculture healthcare sectors**, continues to strengthen its position as a leading player in the global animal health industry. With extensive manufacturing capabilities, strong research and development infrastructure, and a rapidly expanding international distribution network, the company is making significant strides in delivering high-quality healthcare solutions for livestock and aquaculture worldwide.

The organization operates **large-scale production facilities located in and around Vijayawada**, making it one of the largest production hubs in India for animal healthcare products. PVS Group has established **product-category-wise specialized manufacturing units**, ensuring efficient production processes and the ability to meet the diverse needs of the global animal health market.

Quality remains the cornerstone of the company's operations. PVS Group follows **strict quality control and quality assurance protocols**, adhering to well-defined **Standard Operating Procedures (SOPs)** at every stage of the manufacturing cycle. From the **procurement of raw materials to the final production of finished goods**, each step undergoes rigorous monitoring to ensure consistency, safety, and international standards of excellence.

Today, PVS Group's products are exported to **more than 65 countries across the globe**, reflecting the growing trust and demand for the company's solutions in international markets. The company has established a strong global presence through **official distributors across these countries**, enabling efficient product availability and technical support for customers worldwide.

To further strengthen its international presence, PVS Group has set up **its own office in Vietnam** and maintains **direct representation in Bangladesh with dedicated staff**. These strategic initiatives enable the company to provide localized service and build stronger relationships with partners and customers in key markets.

Innovation plays a crucial role in the company's growth strategy. PVS Group operates a **DSIR-certified Research and Development (R&D) centre**, dedicated to developing **new and innovative animal healthcare products in line with evolving market needs**. The R&D team continuously works on advanced formulations and technologies aimed at improving animal productivity, health, and disease management.

Speaking about the company's vision, **Chairman and Managing Director Dr. Seshaiah V. Pamulapati** stated that PVS Group aims to become a **single-window solution for companies seeking high-quality third-party manufacturing services in the animal healthcare sector**.

"Our goal is to provide world-class manufacturing and best-quality products to companies around the world. We believe in maintaining consistent progress in the animal healthcare segment while contributing to the development of innovative and reliable solutions for the global market," he said.

Director Arun emphasized the company's strong focus on global expansion, stating that the leadership team is actively working to **develop and establish PVS Group's export markets worldwide**, further strengthening its international presence.

Looking ahead, PVS Group envisions becoming a **broad and reliable healthcare solutions provider for the animal health industry**, particularly in sectors such as **poultry, swine, ruminants, equine, and aquaculture**. With its strong manufacturing infrastructure, research-driven approach, and growing global network, the company is well positioned to play a significant role in advancing animal healthcare across international markets.

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Breaking Antimicrobial Resistance with Neotle's NeoGut: Novel Natural Biopolymer

Abstract

Antimicrobial resistance (AMR) has become a major global challenge in both human and veterinary medicine. The frequent and excessive use of antibiotics in livestock production has contributed to the development of resistant bacteria and raised concerns about antibiotic residues in food products such as meat and eggs. As a result, consumers and regulatory authorities are increasingly demanding antibiotic-free and sustainable animal production systems.

Naturally sourced novel biopolymers have recently gained attention as promising antimicrobial alternatives due to their biodegradability, biocompatibility, multifunctional antimicrobial mechanisms, and low probability of resistance development. **NeoGut is formulated using a novel naturally sourced biopolymer the second most abundant biopolymer on Earth after cellulose**—to support complete gut health and manage antimicrobial resistance through a unique dual-action mechanism targeting bacterial cell walls and DNA.

Unlike conventional antibiotic growth promoter (AGP) alternatives that function through a single pathway, **NeoGut works through a multi-target antimicrobial strategy, making resistance development highly unlikely while ensuring no antibiotic residues remain in meat and egg products.** This article examines the antimicrobial mechanisms of biopolymers, their role in reducing resistance development, their applications in veterinary systems, and the significance of NeoGut as a sustainable solution for antibiotic-free animal production.

1. Introduction

Modern consumers are increasingly aware of the risks associated with antibiotic residues in food products. As a result, the demand for antibiotic-free meat and eggs has grown significantly across global markets. This has placed considerable pressure on the livestock industry to adopt alternative strategies that can maintain animal health and productivity while reducing dependence on conventional antibiotics.

These challenges highlight the growing need for reliable and standalone solutions capable of effectively managing antimicrobial resistance (AMR) without compromising animal performance. Consequently, research has increasingly focused on alternative antimicrobial strategies derived from natural sources. Among these, biopolymers have emerged as promising candidates due to their biological compatibility, environmental safety, and multifunctional antimicrobial mechanisms, making them suitable for supporting sustainable and antibiotic-free livestock production.

2. Biopolymers: Natural Antimicrobial Materials.

Biopolymers are naturally occurring macromolecules derived from biological sources. Among them, polysaccharide-based biopolymers composed of repeating poly-glucosamine units are widely studied for their natural antimicrobial properties.

Notably, the biopolymer present in NeoGut belongs to a class of naturally occurring polymers that are the second most abundant biopolymer on Earth after cellulose. Their abundance in nature and biological compatibility make them attractive for safe applications in animal nutrition and health.

Key characteristics of these biopolymers include:

- High biodegradability
- Excellent biocompatibility
- Strong interaction with microbial membranes
- Ability to modulate gut microbiota
- Immunomodulatory properties

3. Mechanisms of Antimicrobial Activity

A key advantage of biopolymers present in NeoGut is their ability to exert antimicrobial activity through multiple mechanisms simultaneously. This differs significantly from conventional antibiotics that typically act on a single biochemical pathway.

3.1 Cell Wall and Membrane Disruption

Biopolymers possess positively charged functional groups that interact with negatively charged microbial cell walls. This electrostatic interaction disrupts membrane integrity, increasing permeability and causing leakage of intracellular components.

This mechanism represents the first antimicrobial barrier that weakens microbial cells.

3.2 Intracellular Metabolic Interference

Following initial membrane disruption, lower molecular weight biopolymer fractions can penetrate the microbial cell and interact with intracellular targets. These interactions interfere with critical cellular processes including:

- **DNA replication and transcription**
- **Enzymatic activity essential for cellular metabolism**
- **Key metabolic pathways required for bacterial growth and survival**

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By disrupting these fundamental biological processes, the biopolymer inhibits bacterial proliferation and ultimately leads to the suppression of microbial growth.

3.3 Biofilm Inhibition

Biofilms are protective microbial communities that significantly contribute to antimicrobial resistance. Biopolymers have demonstrated the ability to

- **prevent bacterial adhesion**
- **disrupt established biofilms**
- **reduce microbial persistence in the gut environment.**

3.4 Quorum Sensing Interference

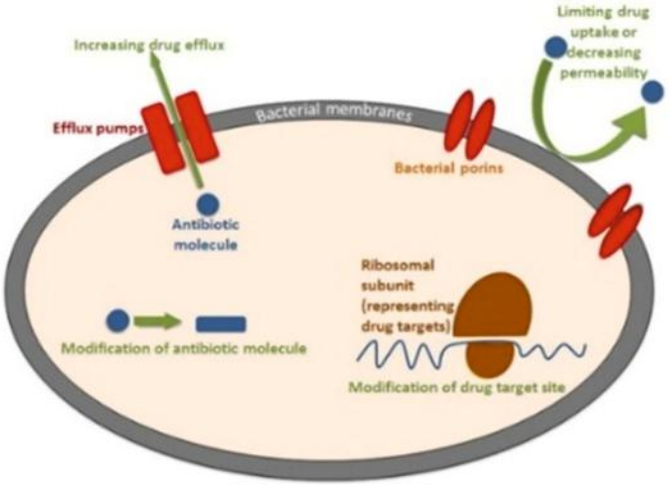
Biopolymer present in NeoGut may also disrupt bacterial communication systems known as quorum sensing, which regulate virulence and biofilm formation.

The simultaneous disruption of multiple microbial processes significantly enhances antimicrobial effectiveness.

4. Multi-Target Mechanism and Low Probability of Resistance

A major limitation of conventional antibiotics is that they target single molecular pathways such as protein synthesis or cell wall formation. Because the target is specific, bacteria can develop resistance through

- target site mutation
- enzyme production
- efflux pump activation



Mechanisms of Action:

Antimicrobial Defense Strategies

5. Immunomodulatory and Gut Health Benefits

In addition to direct antimicrobial effects, biopolymer contribute to improved host defense mechanisms.

They can:

- stimulate macrophage activation
- enhance cytokine signaling
- improve mucosal immunity.

This immunomodulatory activity strengthens the animal's natural defense systems and reduces pathogen colonization pressure without creating selective pressure for resistant strains.

Furthermore, biopolymers help maintain a healthy gut microbiota balance by promoting beneficial microbial populations while suppressing pathogenic bacteria. Improved gut microbiota leads to better nutrient absorption, improved intestinal health, and enhanced overall performance in livestock.

Additionally, Biopolymer present in NeoGut supports

- biofilm disruption
- beneficial microbiota balance
- enhanced immune response
- improved gut health.

6. Addressing Antibiotic Residue Concerns in Meat and Eggs

One of the major concerns associated with antibiotic use in animal production is the presence of drug residues in animal-derived food products. These residues can pose health risks to consumers and contribute to antimicrobial resistance.

Biopolymer in NEOGUT provide a significant advantage in this context. Being naturally sourced macromolecules, they are:

- biodegradable
- metabolically compatible
- non-antibiotic in nature

As a result, they do not accumulate as pharmacological residues in meat or eggs, making them highly suitable for antibiotic-free livestock production systems.

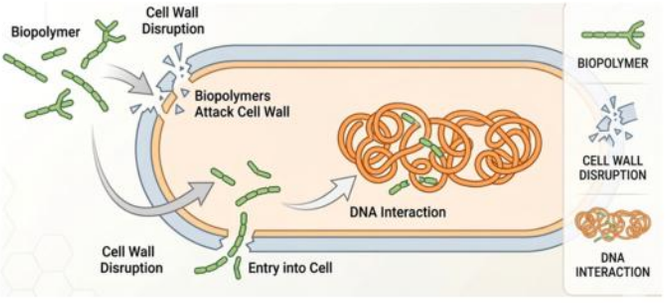
The use of natural biopolymer-based solutions therefore aligns with modern food safety expectations and consumer demand for residue-free animal products.

NeoGut: A Novel Biopolymer-Based Solution

NeoGut represents a new generation complete gut health program designed to support antimicrobial resistance management in livestock production.

The formulation utilizes a novel naturally sourced biopolymer with a dual-action antimicrobial mechanism.

Unlike conventional AGP alternatives that operate through a single mechanism, NeoGut employs a multi-target antimicrobial approach.



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Dual Action Mechanism

1. Bacterial Cell Wall Targeting

The positively charged biopolymer interacts with negatively charged bacterial membranes, disrupting membrane integrity and increasing permeability.

2. DNA and Metabolic Interference

Following membrane destabilization, the biopolymer interferes with bacterial DNA replication and key metabolic pathways, preventing bacterial proliferation.

This dual mechanism—cell wall disruption followed by intracellular interference—creates multiple antimicrobial stresses, making it extremely difficult for bacteria to adapt or develop resistance

NeoGut the Future of Antibiotic-Free Animal Production

As consumer awareness grows regarding antibiotic residues in food products, the demand for antibiotic-free meat and eggs will continue to increase. The livestock industry therefore requires innovative solutions that maintain productivity while ensuring food safety and sustainability.

NeoGut addresses these requirements by combining:

- a naturally derived biopolymer
- multi-target antimicrobial mechanisms
- no residue risk in animal products
- low probability of resistance development

Conclusion

The growing threat of antimicrobial resistance demands innovative, sustainable strategies that go beyond conventional antibiotic approaches in animal production. NeoGut represents a new generation solution built on the power of naturally derived biopolymers. By utilizing the second most abundant biopolymer after cellulose, NeoGut delivers a unique multi-target antimicrobial action that disrupts bacterial cell walls and interferes with intracellular processes such as DNA replication and metabolic activity. This dual-mode mechanism significantly reduces the possibility of microbial adaptation and resistance development.

Importantly, the biopolymer present in NeoGut ensures no pharmacological residues in meat and eggs, aligning with global demands for safer, antibiotic-free animal products. With its versatile applications in poultry health and nutrition, NeoGut stands as the first-of-its-kind biopolymer-based strategy designed to combat antimicrobial resistance while supporting sustainable and responsible animal production systems.

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Gratitude & Highlights: Huvepharma® at Kolkata International Poultry Fair 2026

The curtains have closed on the Kolkata International Poultry Fair 2026, and we are energized by the incredible momentum generated over these dynamic days. Our participation was a resounding success, defined by meaningful connections and a shared vision for the future of the industry.

We extend our deepest gratitude to the remarkable community of professionals, partners, and pioneers who visited our stall. Your presence, curiosity, and collaborative spirit were the driving force behind the vibrant atmosphere and insightful exchanges we witnessed.

To every delegate who engaged with our team: thank you. The discussions we shared went beyond the conventional—they were strategic dialogues filled with valuable perspectives and a mutual passion for innovation and excellence in poultry health and nutrition.

The team of Huvepharma wishes to express our heartfelt thanks for your partnership, which is the cornerstone of our progress. The connections made and strengthened at this year's exhibition are invaluable, and we are thrilled by the opportunities they present.

As we move forward, we carry with us the inspiration and insights gathered. We are more committed than ever to supporting your goals with advanced solutions and unwavering partnership. We look forward to building on this momentum together.

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Alltech Launches Nutrition Service Capabilities in South Asia with new state-of-the-art laboratory in Pune

Alltech President and CEO Dr. Mark Lyons unveiled the **Alltech Nutrition Service Laboratory** at the company's Pune facility on Jan. 16, marking an important step in strengthening nutrition support across South Asia for Alltech. The event was attended by Alltech customers, farmers, partners, industry leaders and media and celebrated with music, dancers and floral decorations, reflecting the energy and optimism of the Alltech South Asia team.

The newly launched Nutrition Service Laboratory has been designed to support farmers at large and feed producers across the region at a time when South Asia is facing increasing protein demand alongside growing feed quality and safety challenges.

"As South Asia grows, so does the region's demand for premium animal protein. This is a massive opportunity for South Asian farmers, but it requires a new level of precision," said Dr. Mark Lyons, president and CEO of Alltech. "By launching this new laboratory in Pune, we are delivering real-time, actionable intelligence. Pairing our laboratory precision with our on-farm tools such as Alltech RAPIREAD™ and infrared thermography offers farmers a roadmap to superior animal health, stronger productivity and long-term sustainability."

The lab can test 50 feed and raw material parameters in Phase 1, with plans to nearly double this capacity in the next phases. These services are complemented by advanced on-farm tools such as Alltech® RAPIREAD™, infrared cameras, eggshell analysis tools and Draeger meters, ensuring producers and farmers receive practical, science-based support across the poultry, dairy and aqua sectors.

Highlighting the importance of the new laboratory, Dr. Aman Sayed, Alltech's managing director for India and regional director for South Asia, emphasized its role in translating science into practical outcomes.

"The Nutrition Service Lab is not just a testing facility, it is a bridge between science and the farm," said Dr. Aman. "It helps the users to clearly understand what is happening in their feed and raw materials and allows us to guide them with practical, targeted nutritional solutions that deliver real value."

Alltech South Asia is also pleased to announce expanded production capabilities with a new bolus manufacturing unit featuring a capacity of 10,000 boluses per hour. Bringing this production in house will enhance efficiency, improve supply reliability and reduce environmental impact, all benefits that extend directly to neighboring markets.

The Pune facility also reflects Alltech's commitment to sustainability, with major investments in clean energy and environmentally responsible operations.

For more information, visit Alltech.com/India.

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ARTICLE

Thermogard Combating Heat Stress in Poultry

Dr. Rohit Rathod, Dr. Gopal Potdar*, Dr. Hardik Patel

Abstract

Heat stress is a major environmental challenge in the poultry industry, causing substantial economic losses globally. It triggers a cascade of physiological changes, including oxidative stress, acid-base imbalances, and immunosuppression, which lead to increased mortality, reduced feed efficiency, lower body weight gain, decreased feed intake, diminished egg production, and compromised meat and egg quality. Various mitigation strategies have been implemented with varying degrees of success, including nutritional interventions like feed restriction, wet or dual feeding, dietary fat inclusion, and supplementation with vitamins, minerals, osmolytes, and phytochemicals. Genetic approaches, such as incorporating naked neck (Na) and frizzle (F) genes in certain breeds, have also shown promise. This review compiles scientific evidence on the effects of heat stress on poultry health and performance, while evaluating effective mitigation strategies for broiler chickens and laying hens.

Introduction

Heat stress represents a significant threat to the poultry sector, adversely affecting bird health, welfare, and productivity. It occurs when poultry cannot achieve a balance between body heat production and dissipation, primarily due to high ambient temperatures combined with factors like humidity, radiant heat, and poor air circulation (Lara *et al.*, 2013). Poultry species maintain a core body temperature of about 41-42°C, with optimal growth in the thermoneutral zone of 18-22°C (N.R. Kumari *et al.*, 2018). Temperatures above 25°C are known to induce heat stress (Donkoh, 1989). In commercial settings, this stressor reduces feed intake, impairs body weight gain, and elevates mortality rates. Broilers are especially susceptible due to their rapid metabolism and high physiological demands.

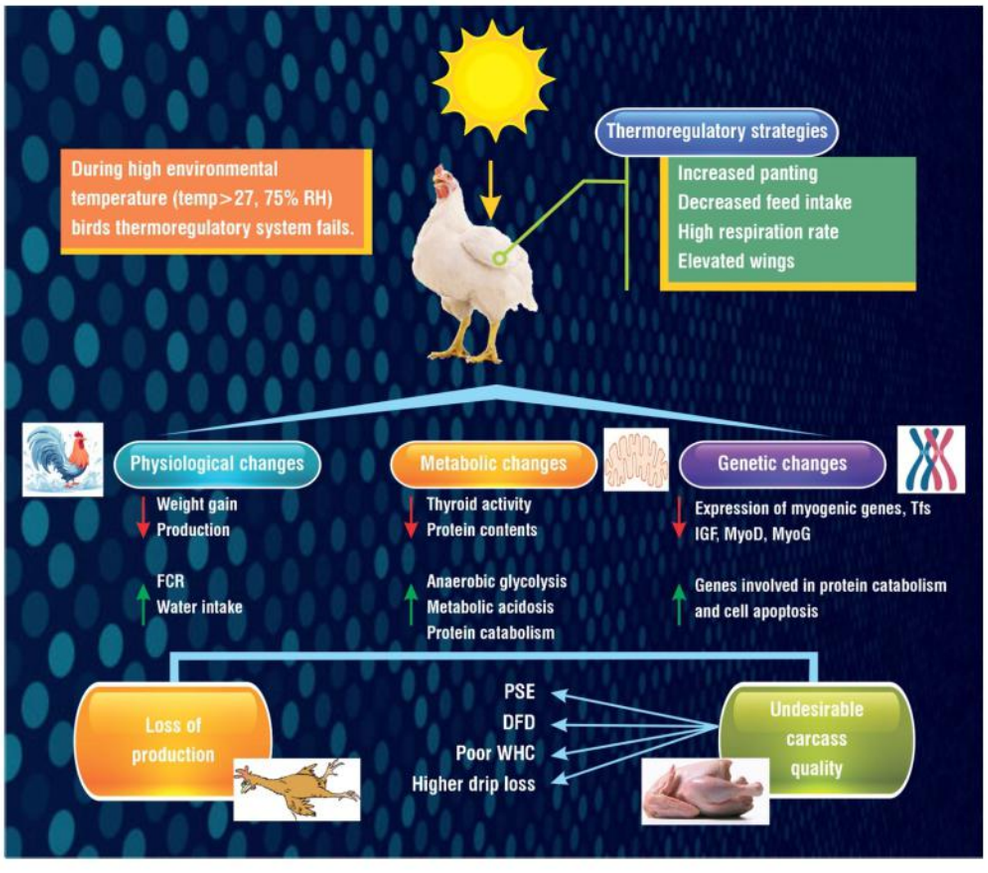
Globally, heat stress results in billions of dollars in losses annually through decreased production efficiency and increased veterinary costs. With climate change exacerbating high-temperature events, particularly in tropical and subtropical regions, the poultry industry faces escalating challenges. This review delves into the physiological, neuroendocrine, and behavioral impacts of heat stress, followed by an exploration of mitigation strategies, including the role of innovative supplements like **Thermogard**.

Physiological, Neuroendocrine, and Behavioural Changes in Poultry Under Heat Stress

Heat stress disrupts homeostasis in poultry, eliciting profound physiological, neuroendocrine, and behavioral responses that culminate in performance declines.

Major Effects of Heat Stress

- **Oxidative Stress**: Overproduction of reactive oxygen species (ROS) damages cells, leading to health disorders and reduced growth.
- **Acid-Base Imbalance**: Panting causes respiratory alkalosis, disrupting blood pH and impairing production.
- **Suppressed Immunity**: Shrinking of immune organs, reduced antibodies, and heightened disease risk.
- **Performance Decline**: Lower feed intake, body weight gain, egg production, and higher mortality.



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Physiological Changes

Oxidative Stress

ROS, such as free radicals and peroxides, are byproducts of normal metabolism. Under thermoneutral conditions, the transcription factor Nrf2 enhances antioxidant production to maintain balance (Surai *et al.*, 2019). Heat stress, however, increases ROS production or diminishes antioxidant defenses, resulting in oxidative stress (Mishra *et al.*, 2019). In poultry, this leads to cellular damage, including protein, lipid, and DNA oxidation (Estevez, 2015). Severe cases can trigger reversible dysfunction, apoptosis, or necrosis (Lennon *et al.*, 1991), contributing to stunted growth, health issues, and economic losses.

Acid-Base Imbalance

Poultry, lacking sweat glands and covered in feathers, struggle with thermoregulation. They rely on panting-rapid respiration with open beaks to evaporate heat from the respiratory tract (Richards, 1970). This expels excess CO_2, altering the bicarbonate buffer system: reduced CO_2 lowers H_2CO_3 and H+ while raising HCO_3^-, causing respiratory alkalosis. The kidneys compensate by excreting HCO_3^- and retaining H^+, but this exacerbates imbalances, negatively affecting production (Borges *et al.*, 2007).

Suppressed Immunocompetence

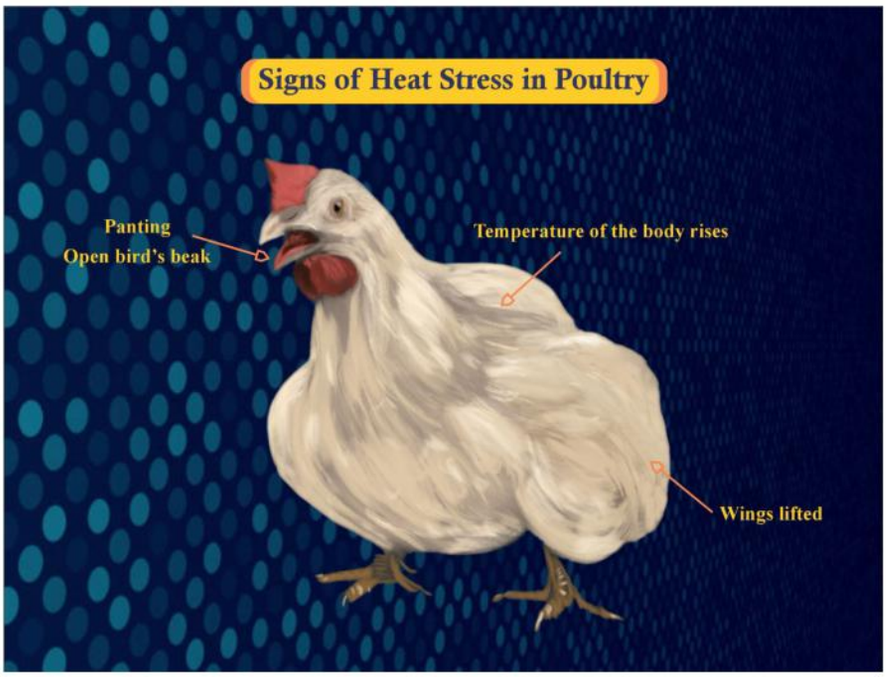
Heat stress weakens the immune system (Lara *et al.*, 2013), increasing vulnerability to diseases like Newcastle and Gumboro, especially in hot seasons (Badruzzaman *et al.*, 2015). It causes atrophy of organs such as the spleen, thymus, and lymphoid tissues (Ghazi *et al.*, 2012), lowers antibody levels (Bartlett *et al.*, 2003), reduces white blood cells, and raises the heterophil-to-lymphocyte (H/L) ratio, a key stress marker (Mashaly *et al.*, 2004). Heat exposure can also lead to gut barrier dysfunction, increasing susceptibility to enteric infections (Song *et al.*, 2012).

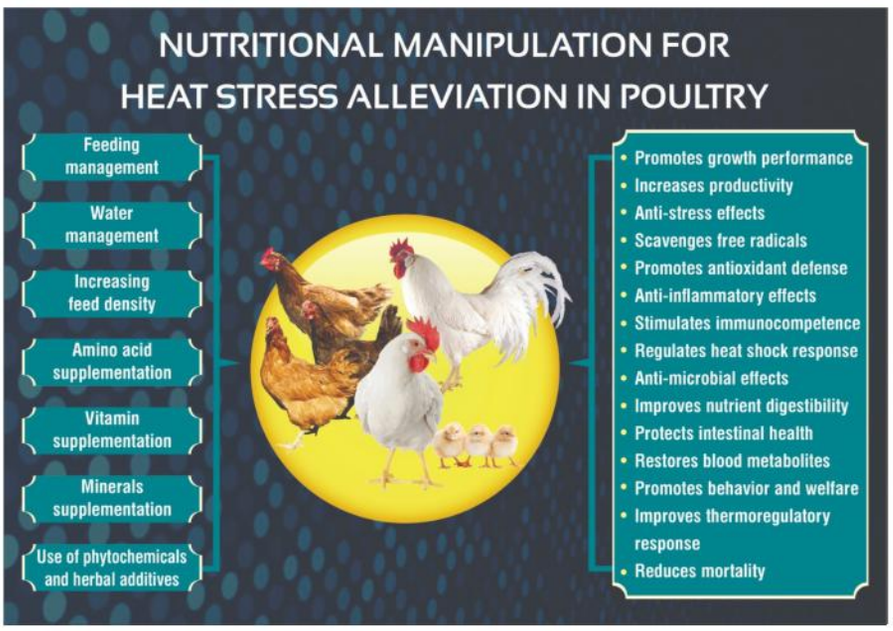
Neuroendocrine Changes

The neuroendocrine system plays a crucial role in stress response. Acute heat activates the sympathoadrenal medullary (SAM) axis, releasing catecholamines from the adrenal medulla, leading to hyperglycemia, glycogen depletion, increased respiration, vasodilation, and heightened neural activity (N.R. Kumari *et al.*, 2018). Chronic stress engages the hypothalamic-pituitary-adrenal (HPA) axis: hypothalamus releases CRH, pituitary secretes ACTH, and adrenals produce corticosteroids for gluconeogenesis and elevated glucose (Smith *et al.*, 2006). Heat also reduces thyroid hormones (T3 via decreased T4 deiodination) (Decuypere *et al.*, 1988; Quinteiro *et al.*, 2012), impairs gonadotrophin-releasing hormone (Nawab *et al.*, 2018), and lowers sex hormones like progesterone, testosterone, and estradiol (Rozenboim, 2007), impacting growth and reproduction (Quinteiro *et al.*, 2012; Yoshida *et al.*, 2011).

Behavioural Changes

To cope with heat, poultry exhibit adaptive behaviors: reduced activity (less walking/standing), decreased feed intake with increased water consumption, wing spreading for airflow, and litter wallowing for cooling. Panting is prominent, often with lethargy and reduced social interactions (Lara *et al.*, 2013). While this aid survival, they reduce nutrient intake and energy for production, worsening losses.





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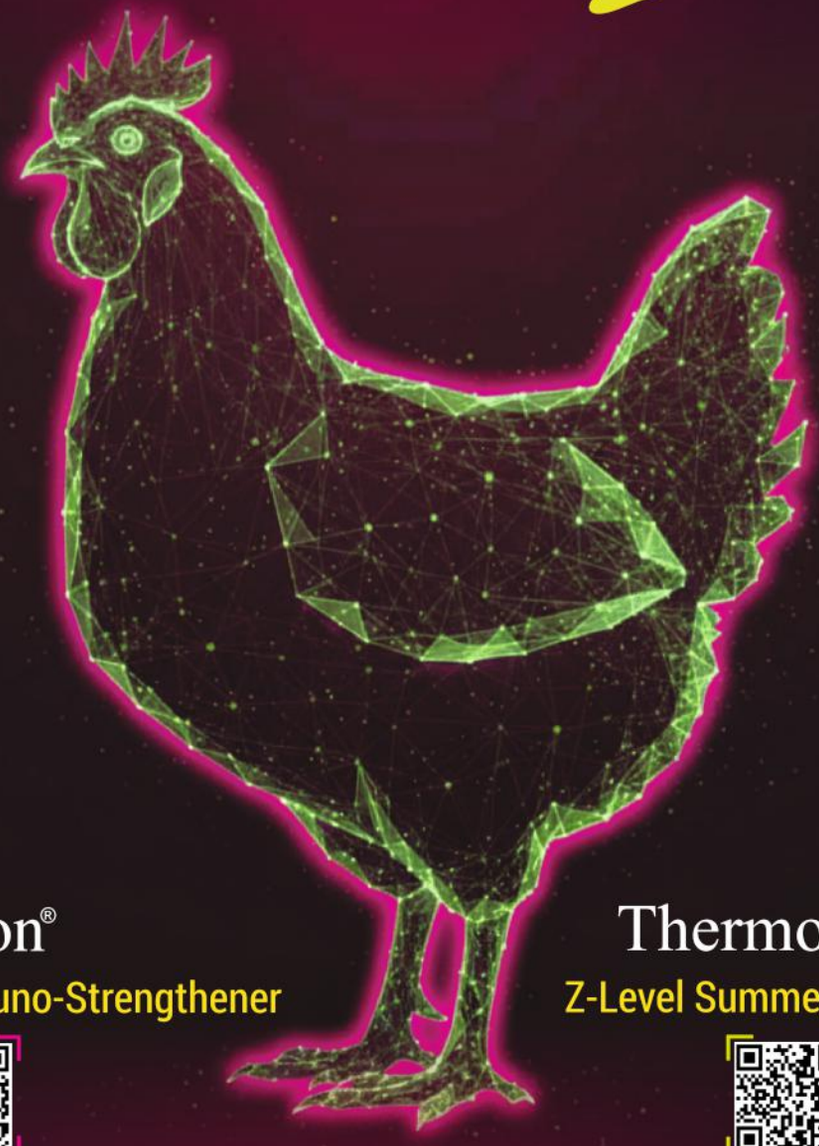

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These changes collectively result in higher mortality, poor feed efficiency, reduced body weight, inferior product quality, and elevated FCR. Amid rising global temperatures, heat stress poses an ongoing economic threat.

Comprehensive Heat Stress Protection with Thermogard

Thermogard offers multifaceted protection against heat stress:

- **Antioxidant Defense**: Neutralizes free radicals, reducing oxidative damage.
- **Immune Support**: Bolsters immunity, lowering disease susceptibility.
- **Metabolic Balance**: Maintains pH, electrolytes, and hydration.
- **Performance Enhancement**: Boosts feed intake, growth, egg production, and efficiency.

Strategies to Mitigate Heat Stress in Poultry

A combination of nutritional and management strategies can alleviate heat stress effects.

Feed Restriction

Restricting feed during hot periods (e.g., 8 a.m.- 5 p.m.) reduces metabolic heat, lowering rectal temperature and mortality (Uzum *et al.*, 2013) while decreasing abdominal fat (Mohamed et al., 2019). However, it may slow growth (Uzum *et al.*, 2013). Dual feeding-protein-rich in cool hours (4 p.m.- 9 a.m.) and energy-rich in warm- reduces temperature and mortality but not necessarily growth (Basilio *et al.*, 2001; Lozano *et al.*, 2006).

Adding Fat in the Diet

Fat produces less metabolic heat than proteins or carbs (Musharaf *et al.*, 1999). At 5%, it slows digesta passage for better utilization (Mateos *et al.*, 1982) and increases energy density (Attia *et al.*, 2018). In layers, it boosts feed intake by 17% (Daghir, 2008); in broilers, it enhances performance (Ghazalah, 2008).

Vitamins

Vitamin E

A fat-soluble antioxidant, it neutralizes radicals and reduces inflammation (Dalolio *et al.*, 2015). At 250 mg/kg in layers, it improves egg quality by protecting liver and vitellogenin (Khan et al., 2011; Bollengier *et al.*, 1999; Yardibi *et al.*, 2008; Mishra *et al.*, 2019). In broilers, it lowers MDA and raises vitamin levels (Sahin *et al.*, 2001).

Vitamin A

Supports immunity and radical neutralization (Sklan, 1994; Palace *et al.*, 1999). Doses of 6000- 9000 IU/kg enhance egg weight and antibodies (Lin *et al.*, 2002); in broilers, it improves growth and reduces MDA (Kucuk *et al.*, 2003).

Vitamin C (Ascorbic Acid)

Scavenges ROS and boosts immunity (Traber *et al.*, 2011; Carr, 2017). Heat stress depletes endogenous synthesis (Khan *et al.*, 2012). At 250 mg/kg, it enhances growth, egg quality, immunity, and antioxidants, while reducing corticosterone.

Minerals

Zinc

Vital for enzymes, antioxidants, immunity, and bones (Prasad, 2002). Induces metallothionein for scavenging (Oteiza *et al.*, 1996) and aids eggshell formation (Balnave *et al.*, 1997). Organic zinc (40 mg/kg) boosts growth, lowers peroxides, and raises SOD (Rao *et al.*, 2016; Lee, 2018).

Chromium

Enhances insulin and metabolism (Vincent, 2000; Hayirli, 2005). 200-1200 µg/kg improves broiler weight, intake, carcass, and hormones (Sahin *et al.*, 2002); in layers, 0.4-2 mg/kg boosts immunity and egg quality (Sahin *et al.*, 2002; Torki *et al.*, 2014). It optimizes glucose use and reduces metabolic disturbances.

Selenium

Key for selenoproteins like glutathione peroxidase (Zhou *et al.*, 2013). 0.3 mg/kg enhances FCR and weight in broilers (Rahimi *et al.*, 2011) and layer performance (Attia *et al.*, 2010).

Electrolytes

Mitigate alkalosis with NH_4Cl, $NaHCO_3$, KCl (Ahmad *et al.*, 2008). $NaHCO_3$ (0.5%) restores pH, improves eggshell (Balnave *et al.*, 1997; Mushtaq *et al.*, 2013), and broiler performance (Benton *et al.*, 1998). They maintain hydration, nerve/muscle function, and thermoregulation.

Betaine

An osmolyte, it preserves cell water, donates methyl, reduces inflammation, and supports gut (Craig, 2004; Ratriyanto, 2018; Zhao, 2018). 0.05-0.20 % boosts intake, carcass, and eggs (Ratriyanto, 2018; Chand *et al.*, 2017). With vitamin C (1000 + 200 mg/kg), it enhances layers (Attia *et al.*, 2016).

Herbs and Phytogenics

Phytogenics scavenge ROS, activate antioxidants, and inhibit oxidants (Thring *et al.*, 2011; Schewe *et al.*, 2008). Key ones include fennel, amla, thyme, rosemary, bael, giloy, lemon, moringa, and menthol.

Key Ingredients and Their Benefits

- **Amla (*Indian Gooseberry*)**: Rich in vitamin C and antioxidants, combats oxidative stress, enhances immunity, improves digestion, supports liver, and aids stress adaptation.

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- **Bael (*Aegle marmelos*):** Improves gut health and absorption, maintains electrolytes, reduces GI issues, and provides cooling.

- **Giloy (*Tinospora cordifolia*):** Immunomodulator that strengthens disease resistance, has antipyretic effects, boosts antioxidants, and enhances resilience.

- **Lemon (*Citrus limon*) Extract:** Maintains digestive pH, provides vitamin C, supports electrolytes, and improves feed palatability.

Expected Results

- Reduced mortality during heat periods
- Improved feed intake and FCR
- Enhanced egg production/quality in layers
- Better growth and carcass in broilers
- Stronger immunity and resistance
- Increased profitability via efficiency

Conclusion

Thermogard is a scientifically formulated supplement blending herbal extracts, vitamins, minerals, and nutrients to address heat stress holistically. Drawing from traditional herbs and modern science, it targets all key disruptions. Regular use ensures bird health, performance, and profitability in harsh conditions. Amid global warming, no single strategy works; **Thermogard**, from ***Z-Level Summer Protection***, integrates amla, bael, giloy, lemon, betaine, vitamin C, chromium, electrolytes, menthol, and more. Pair with optimized nutrition, housing, and management for best results.

*= Contact to know more about dosage, information or references:

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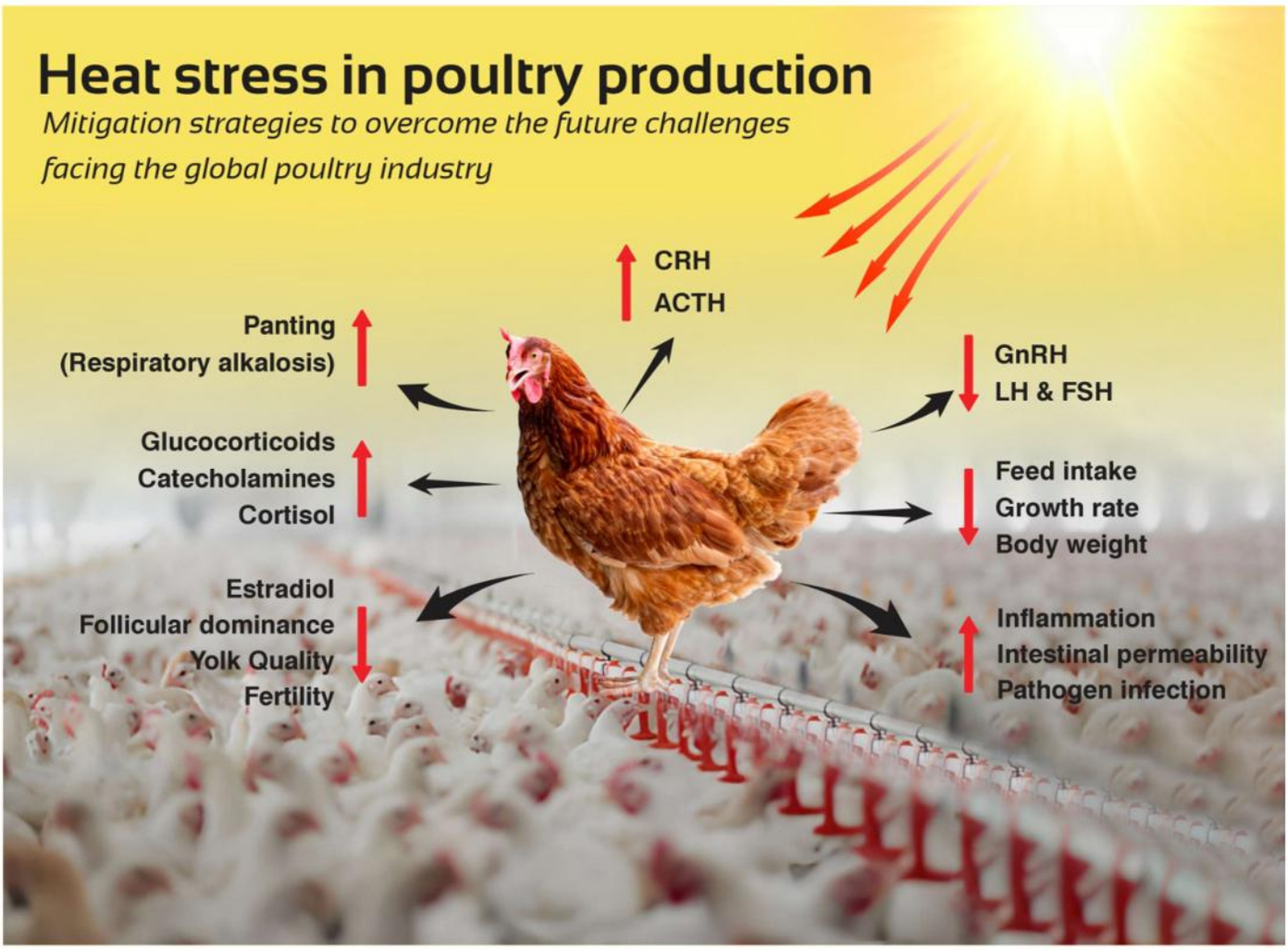

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VIV Health and Nutrition Asia 2026

and VICTAM Asia 2026 from March 10-12-2026 at BITEC, Bangkok, Thailand Concludes With Success – Ricky Thaper

VIV Health and Nutrition Asia 2026 and VICTAM Asia 2026 was organised from March 10-12, 2026 at BITEC, Bangkok, Thailand, the gateway to South East Asian agri food production. The combined exhibitions responds to pressing global challenges including food security, animal health and sustainable production, while supporting the continued growth of Asia's livestock, feed, animal nutrition and agricultural industries. The three days' exhibition over 300 exhibitors across more than 9,000 square meters of exhibition space, covering poultry, livestock, aquaculture, feed and animal health was visited by over 10,000 Trade visitors from 73 countries. VIV Health and Nutrition Asia 2026 and VICTAM Asia 2026 brought together animal health specialists, integrators and technology providers. The event focused on feed quality, additives, veterinary solutions, biosecurity, and performance optimization, creating a dedicated platform for knowledge exchange, innovation, and business in the Asian animal protein market. Industry leaders, innovators and decision-makers gathered to explore latest trends.

Mr. Jeroen Van Hooff, CEO & President, VIV Worldwide said VIV Health and Nutrition Asia 2026 and VICTAM Asia reinforced its commitment to advancing the feed-to-food industry, focusing on food safety and sustainable poultry and aqua development and brought together the full value chain under one roof-innovation, expertise, industry connection networking and business development. Expert-Led Conference Program gained insights from leaders addressing various issues from Resilient feed systems to policy frameworks for sustainable production. Ms. Natasha Hall, Vice President, VNU Europe, stated: "Health & Nutrition Asia 2026 is a platform that connects innovation, animal health and business opportunities, supporting the industry's transition toward sustainability and long-term food security." Ms. Chanita Juntasing, Project Manager, VNU Asia Pacific, added: "The event has been designed as a true space for learning and meaningful business connections, enabling in-depth discussions and negotiations in a friendly environment that fosters high-quality partnerships, particularly within the animal health and nutrition sector."

This year a good number of Indian delegates representing feed millers, poultry breeders and pharmaceutical companies also attended VIV Health and Nutrition Asia 2026. Looking ahead with positive feedback from participants and exhibitors, VIV Health and Nutrition Asia 2026 and VICTAM Asia continues to be a vital platform for business growth, industry collaboration and innovation.

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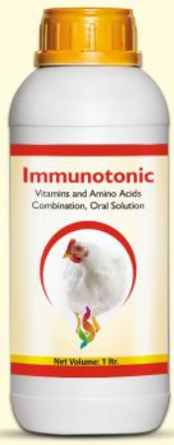

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BASU Team visits IB Group

A high-level delegation from Bihar Animal Sciences University (BASU), Patna, led by Hon'ble Vice-Chancellor Dr. Inderjeet Singh, visited IB Group, Rajnandgaon, to explore avenues for strengthening academia-industry collaboration in poultry education, research, and training.The delegation comprised Dr. Jeetendra Varma, President, World Veterinary Poultry Association India, Dr. Pankaj Kumar Singh, DRI-cum-Dean, PGS; Dr. Kaushalendra Kumar, I/C, Poultry Research & Training Centre and Dr. Nidhi Rawat, Assistant Professor of Veterinary Microbiology, Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Durg, Chhattisgarh;

The team held detailed discussions with Dr. R. K. Jaiswal, President, IB Group, regarding potential areas of cooperation. Dr. Jaiswal outlined the farmer-centric vision and journey of IB Group in transforming India into a protein-rich nation by 2035 through a sustainable, technology-driven poultry and livestock ecosystem. It was impressive to learn about the Group's commitment to empowering farmers, enhancing rural development, and establishing Chhattisgarh as a global protein hub, fostering **"Viksit Poultry" for a "Viksit Bharat."**

Dr. Jaiswal expressed keen interest in signing a Memorandum of Understanding (MoU) with BASU and extending training and internship opportunities to students of B.V.Sc. & A.H. and B.Sc. Poultry Production. Presentations were delivered on the company's integrated operations and "PARIVARTAN GENNEXT," highlighting sustainable and economically viable models of broiler farming.

The delegation visited the Corporate Office, Centre of Excellence, advanced Feed Analytical and Health Diagnostic Laboratories, Hatchery units equipped with strict biosecurity measures, automatic grading and incubation systems, in-house rendering facilities, and in-ovo vaccination technology. The team also toured the feed manufacturing unit with a production capacity of 2,200 MT per day, the soybean oil extraction plant, and other vertically integrated facilities (HDPE bags manufacturing/ printing plant)

Field visits to newly established and modified Environmentally Controlled (EC) poultry farms demonstrated efficient, automated production systems and profitable farming models, reflecting the success of industry-led capacity-building initiatives.

The visit concluded with key recommendations, including signing an MoU, adopting strict biosecurity practices at BASU farms, and establishing a Model EC Poultry House at BASU with technical support from IB Group. The proposed collaboration is expected to enhance hands-on training, promote research excellence, and create greater employment opportunities for students.

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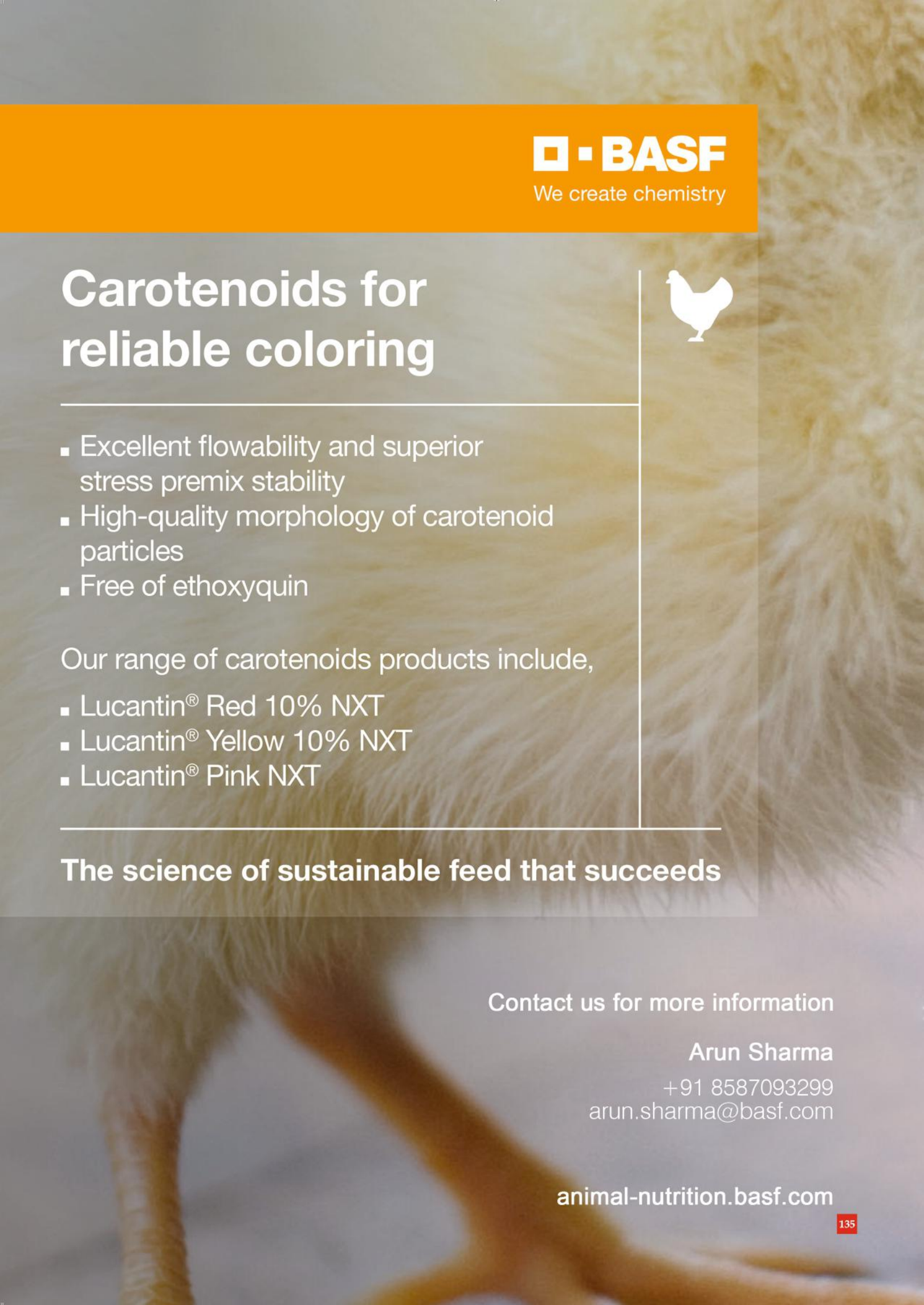
The 12th Kolkata International Poultry Fair (KIPF) 2026, held from 11th to 13th February 2026 at the Biswa Bangla Exhibition Centre, along with the International Seminar NOVACON 2026 on 10th February at the Biswa Bangla Convention Centre, concluded on a highly successful note with record participation from across the poultry value chain. The grand inauguration of the fair on 10.02.2026 was graced by Sri Swapan Debnath, Hon'ble Minister-in-Charge, Animal Resources Development Department, Government of West Bengal, along with other eminent dignitaries, senior bureaucrats, industry leaders, scientists, and representatives from national and state poultry bodies. The event reaffirmed the growing importance of the poultry sector in ensuring nutritional security, rural employment, and economic growth.

NOVACON 2026 recorded a total attendance of 1,150 delegates, reflecting strong engagement from veterinarians, researchers, policymakers, and industry experts. The three-day trade fair witnessed an impressive turnout, with 8,547 visitors on 11.02.2026, 6,372 on 12.02.2026, and 3,294 on 13.02.2026. The Knowledge Zone attracted 1,200 students from several colleges over two days, offering them exposure to modern poultry technologies, industry interaction, and career opportunities. The second-day Technical Seminar saw participation from 400 delegates.

A major highlight of 12.02.2026 was the meeting of the Eastern India Poultry Development Forum, which brought together Presidents, Secretaries, and members of federations and associations from Bihar, Jharkhand, Odisha, Sikkim, Assam, Arunachal Pradesh, Mizoram, Nagaland, Manipur, Tripura, Meghalaya, and West Bengal. The meeting focused on coordinated market information sharing, price stabilization mechanisms, inter-state supply balance, and strategies to increase egg and chicken consumption across Eastern and North-Eastern India, which represent a vast and growing consumer base.

Adding to the excitement on the second day, the National Egg Coordination Committee (NECC) organized an Egg Eating Competition at their stall on 12.02.2026, drawing enthusiastic participation and large public engagement. The event creatively promoted egg consumption while reinforcing awareness about its nutritional benefits.

The Pan India Broiler Coordination Committee meeting emphasized the importance of real-time market intelligence sharing and coordinated price guidance to protect farmers from volatility and maintain stable supply chains across states. The contribution of the West Bengal Poultry Federation in rural poultry development—through broiler integration models, buy-back support, farmer training, disease surveillance, vaccination drives, biosecurity measures, vehicle washing stations, and mobile veterinary services—was widely appreciated.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The New Generation Conclave held on 13.02.2026 brought together the next generation of the poultry sector, where over 150 young entrepreneurs and aspiring poultry farmers engaged in meaningful discussions on the future prospects of the industry. The interactive session focused on innovation, technology adoption, sustainable farming practices, market expansion, value addition, and leadership development to strengthen the sector in the coming years. The conclave served as an inspiring platform to encourage youth participation and ensure continuity and modernization within the poultry industry.

A grand Cultural Dinner held on 12.02.2026 provided an opportunity for delegates from across India to interact and celebrate the unity and diversity of the poultry fraternity. The closing ceremony was graced by Sri Pradip Kumar Mazumdar, Hon'ble Minister-in-Charge, Department of Panchayats & Rural Development, and Sri Biplab Roy Chowdhury, Hon'ble Minister of State with Independent Charge, Fisheries, Aquaculture, Aquatic Resources and Fishing Harbour, Government of West Bengal. Both dignitaries lauded the organizers and underscored the importance of continued coordination, consumption promotion, youth engagement, and farmer protection for the sustainable growth of India's poultry sector.

The 12th Kolkata International Poultry Fair 2026 once again established itself as one of the most significant poultry industry platforms in the region, focusing on demand creation, market stabilization, rural empowerment, and the integration of the next generation into the future of poultry farming.

The organizers are pleased to announce that the 13th Kolkata International Poultry Fair (KIPF) 2027 will be held from 13th to 15th February 2027 (Exhibition), with NOVACON 2027 scheduled on 12th February 2027. The upcoming edition aims to further expand participation, strengthen industry collaboration, and continue promoting sustainable growth and innovation in the poultry sector.

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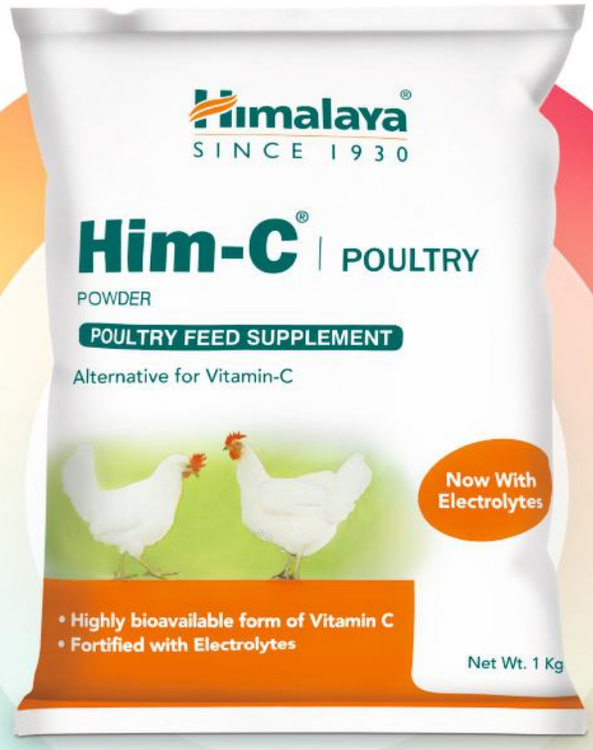

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Empowering Poultry Farmers:

Regen Biocorps Hosts "पोल्ट्री की पाठशाला" in Jhansi

A Farmer Meeting - "पोल्ट्री की पाठशाला" was successfully organized by Regen Biocorps AHI Pvt. Ltd. on **21st February 2026** at Jhansi, Uttar Pradesh. The meeting aimed to provide **hands-on knowledge and scientific solutions to poultry farmers** for improving flock health, productivity, and farm profitability.

The event witnessed enthusiastic participation of **thirty-eight progressive Poultry Farmers** among with **three reputed veterinarians,** making the session highly interactive and informative.

The technical session was enriched by the presence of **renowned poultry consultants Dr. Satyam Khare and Dr. Prabhat,** who shared their valuable field experience and guided farmers on addressing common poultry health challenges.

The discussion primarily focused on major field issues such **as immunosuppression, E. coli infections, and Chronic Respiratory Disease (CRD),** which significantly impacts **flock health, feed efficiency, mortality rate, and farm profitability.** Farmers actively shared their field challenges and sought expert advice on improving management practices.

During the workshop, our, Regen Biocorps' experts highlighted the importance and practical application of key poultry health solutions **including Immon, Thermogard Gutsol, CRDX-IR, Colikil-R, and Hepatotox-ES.** The discussion included the **indications, mode of action, usage guidelines, and benefits of these products** in strengthening the immunity, improving gut health, controlling respiratory and bacterial infections, and supporting liver functions.

The meeting was very well coordinated by the **North Zone team - Mr. Rahul Bhatnagar (ZSM), Mr. Ritesh Srivastava (RSM), Mr. Ashish Kumar Singh (ASM), and Mr. Aman Kumar Tayal (Sr. ASM),** whose dedicated efforts ensured the smooth execution of the program.

The interactive **Question & Answer session** allowed farmers to clarify their doubts and gain practical insights into improving bird health and flock performance.

The meeting concluded with appreciation of all participants, experts, and team members who contributed to making the event successful. Such initiatives by Regen Biocorps will be continued to **empower poultry farmers with knowledge, innovative solutions, and confidence to achieve sustainable and profitable poultry farming.**

A heartfelt thanks to **Mr. Pankaj Hastwala (NSM) and Mr. Pawan Kumar Mudgil (CEO)** for their unwavering support and valuable guidance, which not only strengthens our team but also tries to uplift the poultry farmers by delivering them knowledge, confidence, and success.

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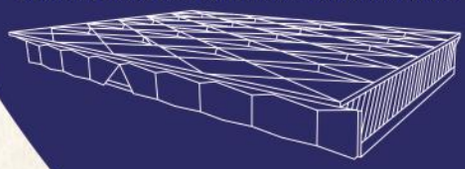

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IPEMA–Poultry India Supports
26th AGM of Broiler Breeders Association – North (BBAN)

IPEMA

Uttarakhand, India - **IPEMA-Poultry India** proudly supported the **26th Annual General Meeting (AGM) of the Broiler Breeders Association - North (BBAN) Held on 27th - 28th February, 2026**, bringing together poultry breeders, industry leaders, entrepreneurs and stakeholders from across North India to discuss the growth, opportunities and future of the broiler breeding sector.

Representing the association, **Mr. Uday Singh Bayas, President - IPEMA / Poultry India**, addressed the gathering and highlighted the remarkable growth of the poultry industry across North India. He noted that the region has emerged as a strong driver of India's poultry production, with states such as **Haryana, Uttar Pradesh, Bihar and Punjab** playing a significant role in strengthening the country's poultry ecosystem.

In his address, Mr. Bayas emphasised that the rising demand for affordable protein, adoption of modern farm technologies, improved genetics, enhanced feed efficiency and stronger breeder networks have significantly contributed to the expansion of the poultry sector in the region. He also highlighted the importance of continued collaboration among breeders, integrators, equipment manufacturers, feed companies, pharmaceutical firms and policy stakeholders to ensure sustainable and profitable growth for the industry.

Mr. Bayas further reiterated the vision of **IPEMA - Poultry India** in bridging industry and academia, creating awareness about protein nutrition and encouraging technological advancement across the poultry value chain.

Speaking about the industry's global outlook, he also highlighted the tremendous success of the **17th Poultry India Expo**, which witnessed strong participation from domestic and international exhibitors, global technology providers and progressive poultry farmers. The expo has evolved into a premier business and technology platform where innovation, knowledge sharing and global collaboration converge to strengthen the poultry sector.

During the event, the **IPEMA-Poultry India team led by President Mr. Uday Singh Bayas was honoured with a memento** presented by **Mr. Mohit Malik, President - BBAN, and Shri Krishnan Mann, Vice President - BBAN**, in the gracious presence of **Shri Gulab Saini, Chairman - Asian Kabaddi Federation**, and **Shri Karmvir Saini, Information Commissioner**, recognising IPEMA's continued support to the poultry industry and breeder community.

On the occasion, **Mr. Bayas invited members of the poultry fraternity to participate in the 18th Edition of Poultry India Expo 2026**, scheduled to be held from **25-27 November 2026 at the HITEX Exhibition Centre, Hyderabad**, along with the **Poultry Knowledge Day on 24 November 2026**. The upcoming edition is expected to be the **world's biggest global poultry expo**, showcasing cutting-edge technologies, breeder innovations, automation systems, animal health solutions and sustainable poultry practices.

Congratulating the Broiler Breeders Association - North for successfully organising the 26th AGM, Mr. Bayas emphasised the importance of unity and collaboration within the industry.

"Unity is strength. Together, we move towards stronger breeder networks and affordable protein for every Indian household," he said.

Through such industry engagements and knowledge platforms, **IPEMA - Poultry India continues to strengthen collaboration, promote innovation and support the sustainable growth of India's poultry sector while positioning the country as a global poultry leader.**

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Bhuvana Nutribio Sciences India & Andres Pintaluba S.A. (APSA) Spain, Successfully Hosts 4th Technical Seminar under Bhuvana – Pintaluba Tech Series in Guwahati, Assam





Bhuvana Nutribio Sciences India & Andres Pintaluba S.A. (APSA) Spain successfully organised its 4th Technical Seminar under the *Bhuvana - Pintaluba Tech Series* on 28th January 2026 at Rohika International Guest House (AAU-IGH), Guwahati, Assam, in collaboration with PDRC, Director of Research, AVFU. The event marked an important milestone in Bhuvana's and Pintaluba's ongoing efforts to promote science-led, practical solutions for the poultry industry.

The seminar was anchored by **Dr. Nikhil Adagale**, *GM, Bhuvana NBS*, and formally began with a welcome address by **Dr. Manoj Kumar Dev Sarma**, *Director Bhuvana*, who emphasised the company's commitment to advancing poultry health through innovation and technical excellence. He also highlighted the importance of the Northeast in poultry production and encouraged the *Vikasit Bharat* mantra and self-sufficiency in this sector very soon. **Dr. Prabodh Borah**, *Directorate of Research AVFU*, addressed the gathering and highlighted the university's involvement in poultry development in this region and the scope of this sector for economic development. **Dr. Hiranya Kumar Bhattacharya**, *Director of the Extension Education, AVFU*, also attended the session.

The keynote session was delivered by **Dr. Abhijit Mishra**. His presentation on "**Integrated Approach to Gut and Respiratory Health in Poultry**" offered valuable scientific insights and practical strategies to improve flock performance and overall farm profitability. The presentation was very informative on ground realities and widely appreciated by participants.

Following the keynote address, **Dr. Jyoti Kumar Mainali**, Area Manager-Asia of *Andres Pintaluba S.A. (APSA)*, presented an overview of the company's corporate profile and highlighted its European-origin Tiamulin 10% (**APSAMIX TIAMULIN 10%**), along with other research-driven products like **APSAVIT OVOSMART, APSA MIOCHEM, APSA AMINOVIT** developed through strong R&D capabilities.

Further, **Dr. Santosh Ire**, *Director, Bhuvana NBS*, shared insights into Bhuvana's journey, outlining the organization's core strengths in gut health management and showcasing innovative tablet-based solutions designed to address key poultry health challenges. (**GutPROP**). He also emphasised the new antiviral solution for coated viruses like IB, ND, AI (**ViroStat AML**) along with the technically leading Halquionol brand. (**BhuQuinol 60% & 12%**). Bhuvana's partner principles companies 'summer solutions are unique and were shared with the audience. (**Patented Chromiate C & Rosh C+**).

The seminar witnessed participation from key poultry stakeholders and protein producers from the Northeastern region. The interactive session was well received, with attendees appreciating the depth of technical knowledge, practical relevance, and industry-focused discussions. Key protein producers who attended include Dr. Pankaj Deka, Dr. Mihir Sarma, Mr. Atul Ghose, Mr. Saju Ahmed, Mr. Dimbeswar Thakuria, Mr. Dinesh Deshmukh, Mr. Sushank Bora, Mr. Prasanta Dey, Mr. Dr. Manash Das, Dr. Lakhi Saikia, Dr. Sahjaman Ali, Dr. Sanjib Khargharia, Dr. Manoj Kumar Bora, Dr. Ranjan Neog, Mr. R. K. Jha, and others.

The event served as a strong branding and engagement platform for Bhuvana Nutribio Sciences, India, and Andres Pintaluba S.A., Spain, while also opening up new business opportunities across Assam and neighbouring states. Bhuvana and Pintaluba expressed sincere gratitude to all participating protein producers for their active involvement and encouragement toward its mission of delivering science-backed poultry solutions. Bhuvana Nutribio Sciences acknowledges the efforts put in by Dr. Pankaj Deka and Dr. Mihir Sarma in making this event successful.

The interactive session concluded with a Vote of Thanks by **Mr. Khanindra Nath Sarma**, *Business Manager, Bhuvana NBS North East, Bhutan & Myanmar*.

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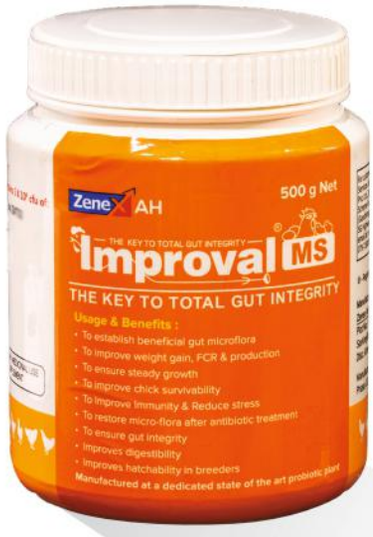

#1 FCR point represent third/last decimal point of 1000

*Majority of field trials were conducted at same farm with multiple sheds in integrations across various geographical locations and at different time of the year. Some of the integrators were generous in sharing complete production indices while others communicated the summary of the trial results. In the field trials, Improval MS was compared with antibiotic/probiotic/antibiotic + probiotic/probiotic + prebiotic control. Detailed reports availble on request.



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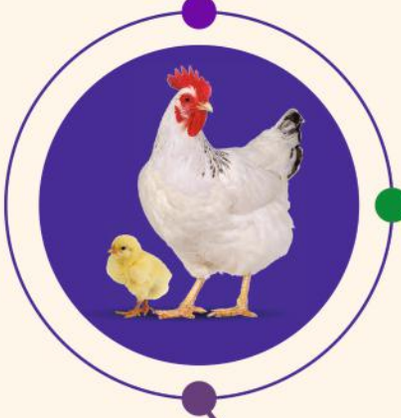

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BULLETIN

PT. VAKSINDO SATWA NUSANTARA,

subsidiary of Japfa- Indonesia signed MOU (Memoranda of Understanding) and investment deal with Telengana State of India at World Economic Forum (WEF) 2026 in Davos, Switzerland

Mr. Ranga Rao Baru, Director of Vaksindo Animal Health Pvt. Ltd., Hyderabad signed MOU with Telengana State led by **Chief Minister A. Revanth Reddy** and the *Telangana Rising* delegation.

Vaksindo Animal Health Pvt. Ltd. (Vaksindo India) is the Indian subsidiary of PT Vaksindo Satwa Nusantara, Indonesia's first animal vaccine manufacturer (est. 1983) and part of the **Japfa Comfeed group**. It specializes in research-based animal vaccines for poultry and livestock.

Vaksindo India is setting up a *state-of-the-art vaccine manufacturing unit* in Genome Valley, Hyderabad — one of India's premier biotechnology and life sciences hubs. This facility is intended to produce animal health vaccines locally to serve domestic farmers and the regional animal health market under the **Make in India**, flagship initiative launched by **Prime Minister Narendra Modi** in 2014 to transform India into a global manufacturing hub.

Vaksindo India's **new manufacturing unit** will be built to comply with **EU - GMP and BSL - 3 biosafety standards** that aims to support both **local vaccine production and research & development of emerging and remerging animal diseases.**

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IPEMA–Poultry India Celebrates
World Protein Day 2026, Promotes Protein Awareness

IPEMA

The Indian Poultry Equipment Manufacturers Association (IPEMA) - Poultry India, supported by the National Egg Coordination Committee (NECC), celebrated **World Protein Day 2026** at SkyKings Football Academy, Secunderabad, emphasising the importance of protein in building strength, supporting growth, and maintaining overall health.

The initiative aimed to raise awareness about the significance of protein-rich nutrition among young athletes and the broader community, highlighting the role of eggs and poultry products as affordable and high-quality sources of protein.

Speaking on the occasion, **Dr. Kiraannmayye Addu, Chief Clinical Nutritionist and Lifestyle Consultant at BirthRight by Rainbow Hospitals**, and **Mr. Mohammad Zakeer, Ex U-17, National Football Coach**, emphasised the importance of balanced nutrition and quality protein in supporting physical development, stamina, and overall well-being, particularly among growing children and sportspersons. They highlighted that adequate protein intake plays a crucial role in building a healthier and stronger nation.

Mr. Uday Singh Bayas, President of IPEMA-Poultry India, reiterated the association's commitment to promoting nutritional awareness through the poultry sector.

"India today produces over **130 billion eggs and around 5 million metric tonnes of broiler meat annually**, making poultry one of the most affordable and high-quality sources of protein available to the population. Through such initiatives, IPEMA-Poultry India continues to promote the importance of protein-rich diets and contribute towards strengthening the country's nutritional security," he said.

To mark the occasion, **eggs were distributed to aspiring trainee footballers** at the academy to encourage healthy dietary habits among young athletes. In addition, **footballs were presented to the young participants** as a gesture of encouragement and support for sports and fitness, while simultaneously spreading awareness about the role of protein and poultry nutrition in maintaining a balanced diet.

World Protein Day, observed annually on **February 27**, serves as a reminder of the importance of incorporating adequate protein in daily diets to support overall health, strength, and immunity. Through this celebration, IPEMA-Poultry India reinforced the message that **choosing the right nutrition today helps build a stronger and healthier tomorrow.**

About IPEMA - Poultry India: The **Indian Poultry Equipment Manufacturers Association (IPEMA)** organises the **Poultry India Expo**, one of the world's premier poultry exhibitions held annually in Hyderabad. The event brings together global industry leaders, innovators, researchers, and stakeholders from across the poultry value chain, fostering knowledge exchange, technological advancement, and industry growth.

The **18th edition of the Poultry India Expo 2026** will be held at HITEX Exhibition Centre, Hyderabad, with **Poultry Knowledge Day on November 24, 2026**, followed by the **Expo from November 25-27, 2026.**


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Dr. S.K. Maini, Completes 50 Yrs., with Livestock and Poultry Industry

With great pleasure, satisfaction and having touched several milestone during this journey over period of time, I wish to thank all my teacher's, senior's , colleagues, junior's, well wisher's, farmer's, friends, industry personalities big and small, with whom I worked or was associated with over the years, and all those who helped me to achieve many of my goals during this journey.

I have complicated 50 Years in this livestock and poultry industry, out of which 25 Yrs., I rendered my services to the industry through Vesper Group, Bengaluru, for which I am grateful to Dr Suresh Sharma and thankful to Mr P. Vijay. N. Raju, (affectionately known as Vesper Vijay in the industry) with whom I have been associated since last 45 Yrs, and all my colleagues at the Vesper Group, and Vesper Distributers throughout the country, with whom I was directly or indirectly connected.

I, Dr Surinder Kumar Maini, completed my graduation (B.V.Sc) from Andhra Pradesh Agricultural University, Hyderabad in 1975. Worked in the AP State Animal Husbandry Dept. for a year, then returned to the Agricultural University for my Post Graduation (M.Sc-Poultry Science) with an ICAR Junior Research Fellowship, completing it in 1978, with H.E.H. The Nizam's Gold Medal for highest OGPA (Overall Grade Point Average).

After completion of the post graduation, I joined the Agricultural University as a Research Assistant in the Department of Poultry Science and was posted as Asst. Farm manager of the AICRP (All India Coordinated Research Project for Poultry on Eggs), Rajendernagar, Hyderabad.

I then moved to M/s BLV Hatcheres at Shamshabad, as a Techincal Manager, in charge of the parent stock farm and hatchery, a franchisee of M/s Essex Farms, New Delhi, a breeding associate of M/s Euribred, Holland, for Hisex White Layers and Hybro Broilers.

Then shifted to M/s Singh Poultry Pvt. Ltd., Shamshabad, as Technical Manager, an associate of M/s Rani Shavers, New Delhi, who were the Indian associate's of M/s Shavers Poultry Breeding Farms, Cambridge, Ontario, Canada.

In the above two assignments, I looked after the Layer and Broiler Parent Stock management, feeding, breeding, health care, vaccinations and disease control, and hatchery operations.

During 1984 - 85, I started my own breeding farm and hatchery unit, near Shameerpet, on the outskirts of Hyderabad, one of the very few in India to breed a variety of colored birds and Japanese Quails for the local market, this activity continued till 2012.

My next assignment was with M/s Basik Breders Ltd., Hyderabad, I was deputed to M/s Shavers Breeding Farms, Cambridge, Ontario, Canada, for an on the job training to manage the Pure Lines and GGPS, their feeding, breeding, management and disease control. While at Cambridge, I was fortunate to spend time with Dr John D Summer's (Nutritionist) at University of Guelph, Dr Nuhad Dagir (Consultant Nutritionist) at Shaver's and Mr Chris Fowler - management specialist, (who was earlier technical person from Shavers looking after their interests in South East Asian operations including India). During this assignment the Shavers white layers and Star Bro broilers were introduced to the Indian Market.

I, then moved to M/s Bovns Poultry Breeders, Hyderabad, was responsible for the starting of the Pure Line and GGPS farm operations and was responsible for the introduction of the Bovans layers and Hypeco broilers in the Indian market.

I, then moved to M/s Star Chick Specialities, a chicken processing plant, a unit of Mr Harbans Singh Nagpal (Singh Poultry Group) to process approximately 1600 birds per hour, was instrumental in its construction and operations from the scratch.

As a poultry consultant, over period of time, I guided and advised many hatcheries and breeder units, like the M/s. Singh Poultry, Avion Hatcheries, Vishakha Hatcheries, SSA Hatcheries, SSN Breeding Farms and Hatcheries, Venus Hatcheries, many Emu farms and hatcheries, Quail, Turkey's and Duck Breeding farms.

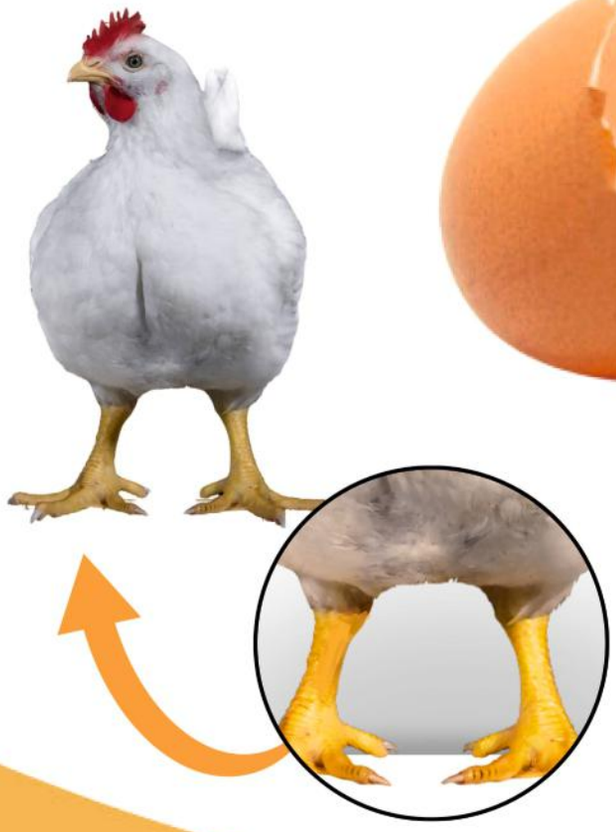
From Poultry breeding and hatcheries, I moved to Pharmaceuticals, first joined M/s Solvey BE Animal Health Ltd., as its Dy. Gen Manager, based in Hyderabad, was instrumental in starting the Poultry Vaccine Production Unit at Gagan Pahad, Hyderabad in association with M/s Solvay of USA.

Finally I shifted to M/s Vesper Group, Bengaluru, as its Gen Manager - Technical, during 1999 and continued till end of March 2025.

During these 50 Yrs of service to the poultry industry, I has been guiding poultry farmers and hatcheries in several parts of the country, solving their management, nutrition and disease related problems, have published several papers in popular poultry magazines for the benefit of the new and old poultry farmers, I have trained several persons for various positions in the poultry industry including Veterinarians.

The knowledge and experience gained over the years, will be shared with the new comer's in the industry in future, as was done in the past. I am only a phone call away, and always willing to help the needy.

Henceforth, I will be a free lancer - consultant for the poultry and livestock farms and also for the veterinary pharma companies and can be contacted on my e-mail: skmaini@yahoo.com and on my Mobile Number: 9848014071.



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Welcomes

Dr. Amit Kumar Patra
as General Manager – Sales & Marketing

VETLINE, a division of **Simfa Labs Pvt. Ltd.**, is pleased to announce the appointment of **Dr. Amit Kumar Patra as General Manager - Sales & Marketing**, based at **Indore, Madhya Pradesh**.

Dr. Amit Kumar Patra holds M.V.Sc. in Animal Nutrition from West Bengal University of Animal & Fishery Sciences, Kolkata, and has also completed Post Graduate Diploma in Marketing Management (PGDMM). With over two decades of extensive experience in the Poultry and Dairy industries, he brings a strong blend of technical expertise and strategic marketing acumen to the organization.

Throughout his professional journey, **Dr. Amit** has demonstrated proactive leadership in Sales & Marketing initiatives, market expansion, customer relationship management, and strategic planning. His comprehensive industry exposure and solution-oriented approach make him a versatile and well-rounded professional. This strategic appointment marks an important milestone in VETLINE's ongoing commitment to sustainable growth and market leadership.

VETLINE is recognized as one of India's pioneering Animal Health & Nutrition groups, with a growing presence across multiple international markets. The company operates a state-of-the-art manufacturing facility adhering to international quality standards, including FAMI-QS, GMP and ISO certifications. With a strong focus on innovation, quality, and customer-centric solutions, VETLINE continues to deliver high-performance products that support farmers and industry partners in achieving optimal results.

Expressing his confidence, Mr. S. S. Bhatia, Executive Director, stated:

"Under the leadership of Dr. Amit, VETLINE is well-positioned to further strengthen and consolidate its presence as a market leader in Animal Health & Nutrition. I am confident that his extensive industry experience, combined with our commitment to quality and innovation, will create significant value for both the organization and the industry at large."

Sharing his enthusiasm, Dr. Amit Kumar Patra said:

"I am delighted to join VETLINE and look forward to working closely with our talented team and valued partners. Together, we will focus on delivering innovative, science-driven solutions that empower farmers and strengthen our position as a trusted industry leader."

For more information, please contact Dr. Amit Kumar Patra or visit: www.vetline.in

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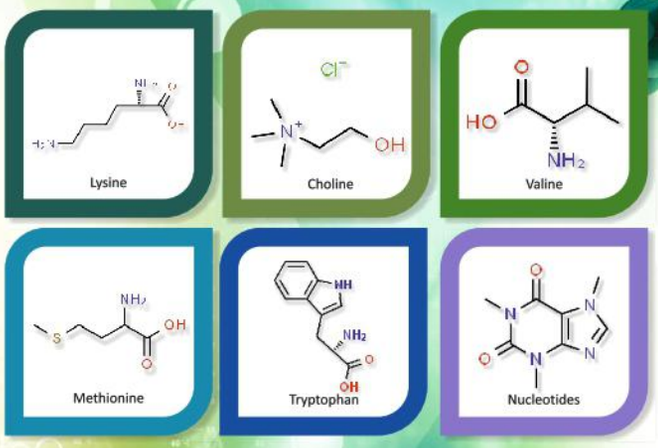

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ब्रॉयलर ब्रीडर्स एसोसिएशन नॉर्थ की 26वीं

आम सभा जिम कॉर्बेट में सफलतापूर्वक सम्पन्न

ब्रॉयलर ब्रीडर्स एसोसिएशन नॉर्थ (BBAN) की 26वीं वार्षिक आम सभा (Annual General Meeting) का आयोजन 27–28 फरवरी 2026 को अनन्तम गेटवे रिजॉर्ट, जिम कॉर्बेट, उत्तराखंड में सफलतापूर्वक किया गया। इस दो दिवसीय कार्यक्रम में उत्तर भारत के विभिन्न राज्यों से बड़ी संख्या में पोल्ट्री ब्रीडर्स, किसान, हैचरी संचालक, उद्योग से जुड़े प्रतिनिधि और विशेषज्ञों ने भाग लिया। यह आयोजन उत्तर भारत के ब्रॉयलर उद्योग की प्रगति और भविष्य की रणनीतियों पर चर्चा के लिए एक महत्वपूर्ण मंच साबित हुआ।

कार्यक्रम की शुरुआत दीप प्रज्वलन समारोह से हुई, जिसमें श्री मोहित मलिक (अध्यक्ष, BBAN), श्री रणपाल ढांडा (अध्यक्ष, पोल्ट्री फेडरेशन ऑफ इंडिया),श्री गुरमिंदर बिसला (पूर्व अध्यक्ष), श्री पाला राम राठी (नेता INLD), श्री बलराज घनघस (पूर्व अध्यक्ष, BBAN), श्री उदय सिंह बयास (अध्यक्ष, IPEMA / पोल्ट्री इंडिया), श्री एस. एस. लाकड़ा (वेंकी इंडिया प्रा. लि.), स. दर्शन सिंह सोही (उपाध्यक्ष), श्री रामचन्द्र मलिक (पूर्व सचिव NZBBA) तथा श्री कृष्ण गावड़िया (राजस्थान राज्य अध्यक्ष, BBAN) सहित अन्य गणमान्य अतिथि उपस्थित रहे।

प्रथम दिवस के मुख्य आकर्षण

कार्यक्रम का स्वागत संबोधन श्री रवि सभरवाल, चेयरमैन, BBAN ने दिया। उन्होंने उत्तर भारत में ब्रॉयलर उद्योग को मजबूत बनाने के लिए एसोसिएशन द्वारा किए गए कार्यों की जानकारी दी तथा आयोजन को सफल बनाने में सहयोग देने वाले सभी सदस्यों और प्रतिनिधियों का आभार व्यक्त किया।

श्री गुरमिंदर बिसला, पूर्व अध्यक्ष BBAN, ने अपने संबोधन में बताया कि इस बैठक में पिछले वर्ष की उपलब्धियों के साथ–साथ एसोसिएशन की भविष्य की योजनाओं पर भी चर्चा की जाएगी।

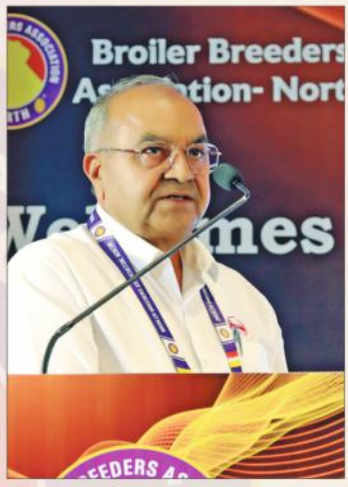
मुख्य अतिथि श्री पाला राम राठी, (नेता INLD) ने अपने संबोधन में कहा कि ब्रॉयलर कीमतों की मजबूती और उद्योग की स्थिरता में BBAN का महत्वपूर्ण योगदान रहा है। उन्होंने एसोसिएशन की निरंतर सफलता की कामना की।

श्री बलराज घनघस, पूर्व अध्यक्ष BBAN, ने किसानों से अपील की कि वे सिंगल विंडो सेलिंग सिस्टम को बढ़ावा दें, जिससे बाजार व्यवस्था अधिक पारदर्शी और प्रभावी बन सके। उन्होंने एसोसिएशन द्वारा निर्धारित 70 सप्ताह उत्पादन लक्ष्य को भी अपनाने का आह्वान किया।

श्री रणपाल ढांडा, अध्यक्ष - पोल्ट्री फेडरेशन ऑफ इंडिया, ने BBAN की टीम को उनके सफल प्रयासों के लिए बधाई दी और सिंगल विंडो सिस्टम जैसे प्रयासों की सराहना की। उन्होंने आगामी VIV Select India 2026 प्रदर्शनी के बारे में भी जानकारी दी, जो 22–24 अप्रैल 2026 को यशोभूमि एक्सपो सेंटर, नई दिल्ली में आयोजित होने जा रही है, और सभी उद्योग प्रतिनिधियों को इसमें भाग लेने का आमंत्रण दिया।

श्री उदय सिंह बयास, अध्यक्ष – IPEMA / पोल्ट्री इंडिया, ने उत्तर भारत में पोल्ट्री उद्योग की तेजी से हो रही प्रगति पर प्रकाश डाला। उन्होंने बताया कि हरियाणा, उत्तर प्रदेश, बिहार और पंजाब जैसे राज्य देश के पोल्ट्री उत्पादन को मजबूत बनाने में महत्वपूर्ण भूमिका निभा रहे हैं। उन्होंने कहा कि सस्ती प्रोटीन की बढ़ती मांग, आधुनिक फार्म तकनीकों का उपयोग, बेहतर जेनेटिक्स, उच्च गुणवत्ता वाले फीड और मजबूत ब्रीडर नेटवर्क के कारण इस क्षेत्र में उल्लेखनीय वृद्धि हुई है।

श्री प्रवीण कुमार – वरिष्ठ उपाध्यक्ष, BBAN ने सभा को संबोधित करते हुए कहा कि हमें सभी किसानों को सिंगल विंडो सेवा को सफल बनाने के लिए मिलकर कार्य करना चाहिए। साथ ही उन्होंने बताया कि उद्योग में नई टैक्नोलॉजी के प्रयोग से पोल्ट्री का भविष्य बेहतर हो सकता है। अन्त में उन्होंने पोल्ट्री केज में तार की गुणवता के बारे विस्तार से बताया।



वेंकी इंडिया प्रा. लि. के श्री एस. एस. लाकड़ा ने कहा कि आज भारत दुनिया का चौथा सबसे बड़ा चिकन मांस उत्पादक और दूसरा सबसे बड़ा अंडा उत्पादक देश बन चुका है। उन्होंने इस उपलब्धि का श्रेय BBAN जैसे संगठनों को दिया, जो देश की पोषण सुरक्षा में महत्वपूर्ण भूमिका निभा रहे हैं।

पहले दिन विभिन्न प्रायोजकों द्वारा तकनीकी और व्यावसायिक प्रस्तुतियाँ भी दी गईं। इनमें Lexington, Pollex Equipments, Dhirendera Soya, Luxmi Pharma, Vetsfarma, Ventri Biologicals, Kissan Poultry, Shiv Soya, Anil Poultry, Agarwal Industries, Rathi Group और Glanco Exports शामिल रहे। कार्यक्रम के अंत में स्मृति चिन्ह वितरण समारोह भी आयोजित किया गया।

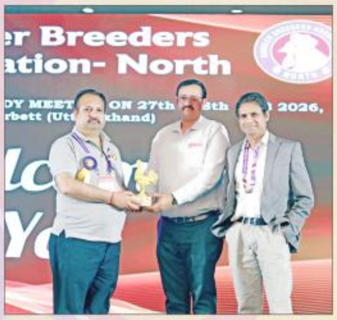


















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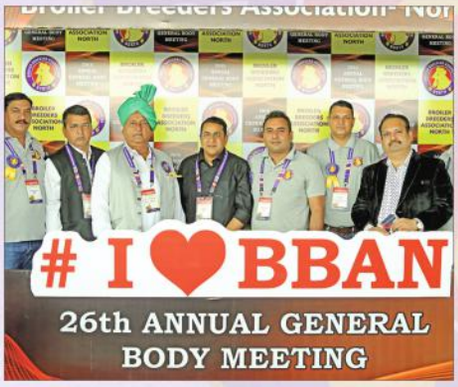
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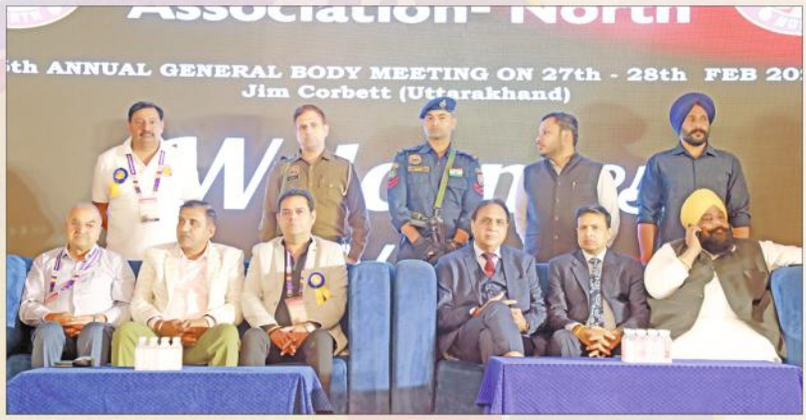
द्वितीय दिवस के मुख्य आकर्षण

कार्यक्रम के दूसरे दिन मुख्य अतिथि श्री गुलाब सिंह सैनी, अध्यक्ष – एशियन कबड्डी फेडरेशन, तथा श्री कर्मवीर सैनी, सूचना आयुक्त का स्वागत श्री मोहित मलिक, अध्यक्ष BBAN द्वारा पुष्पगुच्छ और स्मृति चिन्ह भेंट किया गया।



अपने संबोधन में श्री मोहित मलिक ने पोल्ट्री उद्योग से जुड़ी कुछ महत्वपूर्ण मांगों को सरकार के समक्ष रखा। उन्होंने कहा कि:

- महाराष्ट्र की तर्ज पर हरियाणा में पोल्ट्री को कृषि का दर्जा दिया जाए और इसे प्रदूषण की श्रेणी से बाहर रखा जाए।
- हरियाणा के पोल्ट्री फीड मिलर्स को अन्य राज्यों से महंगा अनाज मंगवाना पड़ता है, जिस पर मार्केट फीस समाप्त की जाए।
- उत्तर प्रदेश और बिहार की तरह लोन पर ब्याज सब्सिडी तथा कैपिटल सब्सिडी प्रदान की जाए।
- ग्रीन ऊर्जा को बढ़ावा देने के लिए पोल्ट्री यूनिट्स में बायोगैस प्लांट और सोलर सिस्टम लगाने पर सब्सिडी दी जाए।

अपने संबोधन में श्री गुलाब सिंह सैनी ने एसोसिएशन की एकता और किसानों की मेहनत की सराहना करते हुए कहा कि पोल्ट्री उद्योग देश की प्रोटीन आवश्यकता को पूरा करने में महत्वपूर्ण भूमिका निभा रहा है। उन्होंने किसानों से आधुनिक तकनीकों को अपनाने का आग्रह किया और सरकार की ओर से हर संभव सहयोग का आश्वासन दिया। उन्होंने यह भी सुझाव दिया कि एसोसिएशन कबड्डी प्रतियोगिताओं के आयोजन में सहयोग करे, जिससे युवाओं को खेलों की ओर प्रोत्साहन मिल सके।

श्री कर्मवीर सैनी, सूचना आयुक्त, ने कहा कि पोल्ट्री और हैचरी उद्योग ग्रामीण क्षेत्रों में रोजगार के नए अवसर पैदा कर रहा है। उन्होंने एसोसिएशन की मांगों को गंभीरता से लेने की बात कही और आश्वासन दिया कि इस विषय पर हरियाणा के मुख्यमंत्री श्री नायब सिंह सैनी के साथ बैठक कर उद्योग के हित में कदम उठाए जाएंगे। उन्होंने बताया कि सरकार कई योजनाओं के तहत 25 से 50 प्रतिशत तक की सब्सिडी भी प्रदान कर रही है।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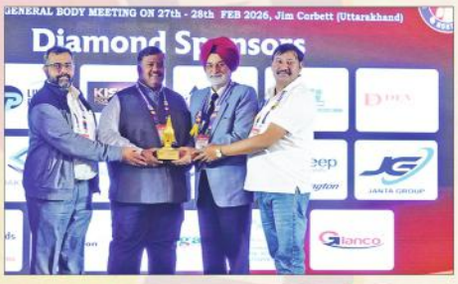






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दो दिवसीय यह सम्मेलन उद्योग से जुड़े सभी पक्षों के लिए विचार–विमर्श, सहयोग और भविष्य की रणनीति तय करने का महत्वपूर्ण मंच साबित हुआ। ब्रॉयलर ब्रीडर्स एसोसिएशन नॉर्थ की 26वीं वार्षिक आम सभा ने उत्तर भारत के पोल्ट्री उद्योग को सशक्त बनाने और किसानों की आवाज को नीति–निर्माताओं तक पहुँचाने की दिशा में एक महत्वपूर्ण कदम स्थापित किया।

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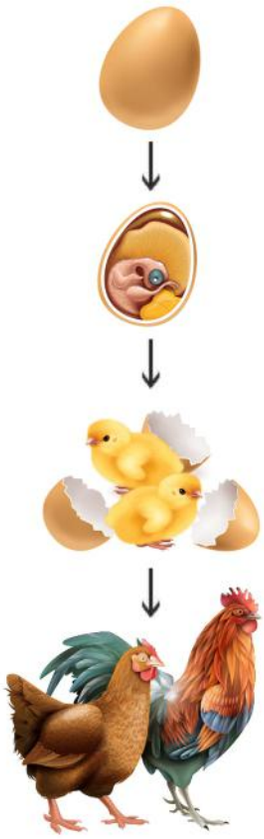

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