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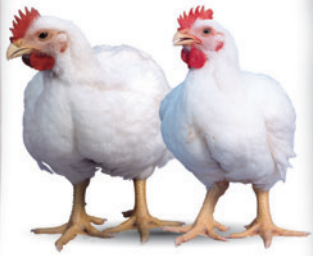
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WORLD EGG DAY CELEBRATIONS: TIME TO SCALE IMPACT



As the global egg community marked the 30th anniversary of World Egg Day on 9th October 2026, the occasion was more than a celebration. It was an opportunity to reflect on the role the egg can play in India's nutrition, food security and economic development.

India has built one of the world's largest egg industries. Advances in genetics, nutrition, farm management, veterinary science and technology have transformed production and made the country a major force in the global egg economy.

Yet production is only part of the story. The real measure of success should be how effectively the egg contributes to better nutrition.

India continues to face challenges of protein intake and dietary diversity, particularly among vulnerable populations. The egg, with its nutritional value, affordability and versatility, can make a meaningful contribution. But this potential requires greater awareness and a stronger connection between the poultry industry and the wider nutrition and public-health conversation.

The industry must also look ahead. Climate change, heat stress, disease, feed costs, resource efficiency and sustainability will increasingly influence egg production. The future will demand eggs that are not only nutritious and affordable, but also produced responsibly and efficiently.

The 30th anniversary should, therefore, be a moment to think beyond production targets. India needs to scale the impact of the egg—not merely its output.

The poultry industry has built the production engine. The next challenge is to build a stronger consumption movement, backed by science, consumer education and collaboration across industry, government, healthcare and academia.

That could be the defining mission of the next 30 years of World Egg Day.

G. N. Ghosh
Managing Editor

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Beyond Growth: How Oyster Mushroom Waste Improves Carcass Yield and Meat Quality in Japanese Quails

Sarbaswarup Ghosh[1], Koyel Choudhury[2], Santanu Bera[2], Abhijit Ghosal[1], Nilotpal Ghosh[2]

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Industry Insights for Modern Quail Production

The Indian poultry sector is experiencing a significant shift as urban consumers increasingly seek lean, protein-rich, and premium meat alternatives. Among these, Japanese quail (Coturnix coturnix japonica) meat has emerged as a high-value category, particularly in the expanding frozen and ready-to-cook retail segments (Kouret al., 2024). However, for producers, balancing the rising cost of high-protein feed inputs with consumer demands for superior meat quality remains a persistent challenge.

Integrating agro-industrial byproducts into poultry nutrition offers a viable strategy to address both sides of this equation. Spent Mushroom Substrate—specifically oyster mushroom waste (OMW)—is gaining attention as a functional feed additive. Rich in bioactive compounds, residual proteins, and antioxidants, oyster mushroom waste serves not only as a cost-effective feed supplement but also as a powerful agent for improving yield traits, lipid profiles, and shelf-life stability in Japanese quails. Recent studies have shown that dietary supplementation with oyster mushroom waste significantly enhances growth performance and feed efficiency in Japanese quails (Choudhury et al., 2026).

The Experimental Framework

To evaluate the efficacy of Spent Mushroom Substrate, a controlled trial was conducted using 117 day-old Japanese quail chicks at Sasya Shyamala Krishi Vigyan Kendra (SS KVK) poultry farm. The birds were randomly allocated into three distinct dietary treatment groups (39 birds per group, with 3 replicates of 13 birds each):

- Group C (Control): Fed a standard commercial basal diet without supplementation
- Group T1: Fed the basal diet supplemented with 5% dried Oyster Mushroom Waste (OMW)
- Group T2: Fed the basal diet supplemented with 10% dried Oyster Mushroom Waste (OMW)

Boosting Carcass Yield and Portion Weights

In commercial quail farming, dressing percentage and the yield of high-value cuts (breast and thigh) directly dictate profit margins. Recent trials evaluating the inclusion of processed oyster mushroom waste in quail diets demonstrate a marked improvement in overall meat recovery compared to standard control diets.

The addition of oyster mushroom waste significantly enhances metabolic efficiency and muscle protein accretion. Birds fed dietary mushroom waste achieved an exceptionally high dressing efficiency relative to the conventional baseline, driven primarily by substantial weight gain in primary meat cuts.

Table 1 : Effect of OMW on Mean Carcass Parameters in Japanese Quail

Parameter	Control (C)	T1	T2
Live Weight (g)	180.50	195.40	210.20
Carcass Weight (g)	148.01	172.15	223.23
Breast Weight (g)	32.96	38.10	43.21
Thigh Weight (g)	18.20	21.05	24.15
Drumstick Weight (g)	15.10	17.30	19.80
Neck Weight (g)	8.40	9.00	9.60
Liver Weight (g)	3.10	3.25	3.45
Heart Weight (g)	1.85	1.95	2.05
Gizzard Weight (g)	3.50	3.65	3.80

**Dressing percentage yields reflect relative carcass processing weight ratios enhanced by improved muscle mass density.*

The increase in breast muscle weight—from 32.96 grams in control groups to 43.21 grams in supplemented groups—represents an approximate 31% increase in premium meat yield. This improvement is attributed to the presence of natural polysaccharides, glucans, and digestive enzymes in mushroom waste, which optimise nutrient absorption and gut morphometry.

Nutritional Superiority and Biochemical Profile

Beyond physical yield, dietary oyster mushroom waste alters the biochemical composition of quail meat, producing a nutritional profile aligned with the demands of health-conscious consumers. Evaluation of the chemical composition of Japanese quail meat demonstrates improvements in moisture retention, protein density, and lipid reduction in the supplemented group (T2). Analysis of lean tissue reveals that quails receiving mushroom-waste-supplemented diets exhibited a crude protein content of 97.32% (on a dry matter basis), compared to 91.70% in control groups. This enhanced protein retention highlights higher amino acid digestibility and nitrogen retention during the growth phase.

Table 2: Effect of OMW on Meat Quality in Japanese Quail

Component	Control (%)	T1 (%)	T2 (%)
Moisture	73.50	73.85	74.20
Crude Protein	91.70	94.50	97.32
Crude Fat	3.85	3.10	2.40

Improved Shelf Life and Oxidative Stability

For the frozen and processed retail market, lipid oxidation is the primary cause of quality deterioration, off-flavours, and discolouration. Controlling Thiobarbituric Acid (TBA) values—a key indicator of lipid peroxidation—is critical for extending refrigerated and frozen shelf life. Agro-waste from oyster mushrooms is



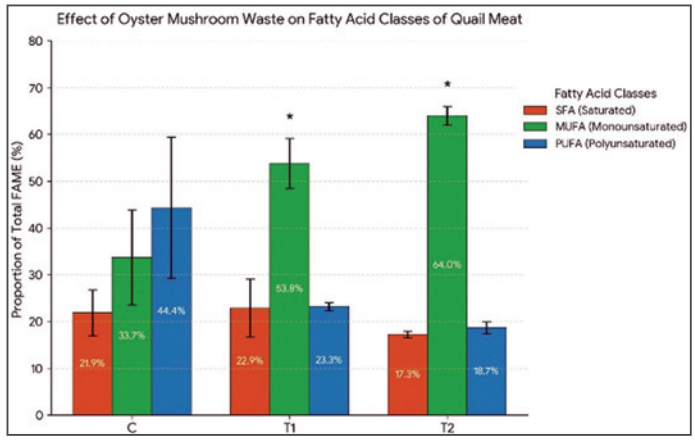
naturally rich in phenolic compounds and antioxidants that accumulate in muscular tissue, serving as an endogenous defence mechanism against lipid breakdown. By Day 42 of post-harvest cold storage, the TBA value in control samples rose to 0.781 mg MDA/kg, indicating significant lipid breakdown. In contrast, quail meat from the mushroom-supplemented groups maintained a low TBA value (0.458 mg MDA/kg for T1 and 0.301 mg MDA/kg for T2). This dramatic reduction in oxidation rate enhances product stability, delays rancidity, and extends retail display life without requiring synthetic preservatives.

Table 4: Effect of OMW on Oxidative Stability (Mean) of Meat in Japanese Quail

Storage Duration	Control (mg MDA/kg)	T1 (mg MDA/kg)	T2 (mg MDA/kg)
Day 42 post slaughter	0.781	0.458	0.301

Fatty Acid Profile: Enriching Healthy Monounsaturated Fats

For health-conscious urban consumers, the dietary value of poultry meat is largely governed by its lipid quality—particularly the ratio of beneficial unsaturated fatty acids to saturated fats. Gas chromatography analysis of quail muscle tissue revealed that dietary inclusion of oyster mushroom waste markedly improves the fatty acid architecture. The most notable change was a dose-dependent surge in Monounsaturated Fatty Acids (MUFA). Quail meat from the 10% OMW (T2) group exhibited a dominant MUFA concentration of 64.05%, compared to only 33.74% in the control group. This enhancement was primarily driven by Oleic acid (C18:1 cis-9)—the heart-healthy fatty acid prominent in olive oil—which rose from 16.65% in control birds to 29.57% in the T2 group. Concurrently, Palmitoleic acid (C16:1), an active lipokine known to improve metabolic health, increased from 6.79% to 13.64%. Contrary to common misconceptions, this dramatic shift towards MUFA, coupled with a deliberate reduction in Polyunsaturated Fatty Acids (PUFA) and Saturated Fatty Acids (SFA), provides a dual advantage. First, the lowering of SFA to 17.26% in the T2 group creates a heart-healthy, low-cholesterol meat profile that actively mitigates cardiovascular risks. Second, while PUFA is beneficial for human health, excessive PUFA in meat tissues rapidly accelerates lipid peroxidation, leading to rancidity. The optimised lipid profile—featuring higher MUFA and lower PUFA in the supplemented groups—strikes the perfect biological balance. It significantly enhances the oxidative stability and frozen shelf-life of the quail meat (aligning perfectly with the improved TBA values discussed earlier) without compromising its cardio-protective properties.



Economic and Strategic Outlook for Farmers

Utilising oyster mushroom waste presents a circular-economy solution for the Indian poultry industry. By converting an abundant agricultural byproduct into high-performing feed ingredient, producers can achieve two major objectives:

1. **Cost Reduction for Farmers:** Replacing a portion of expensive conventional raw materials with upgraded agro-waste lowers total feed formulation costs while improving feed conversion efficiency and cut yield.
2. **Value Addition for Consumers:** Delivering a premium, low-cholesterol, high-protein quail meat product with extended shelf life creates distinct marketing advantages for urban retail and direct-to-consumer delivery networks.

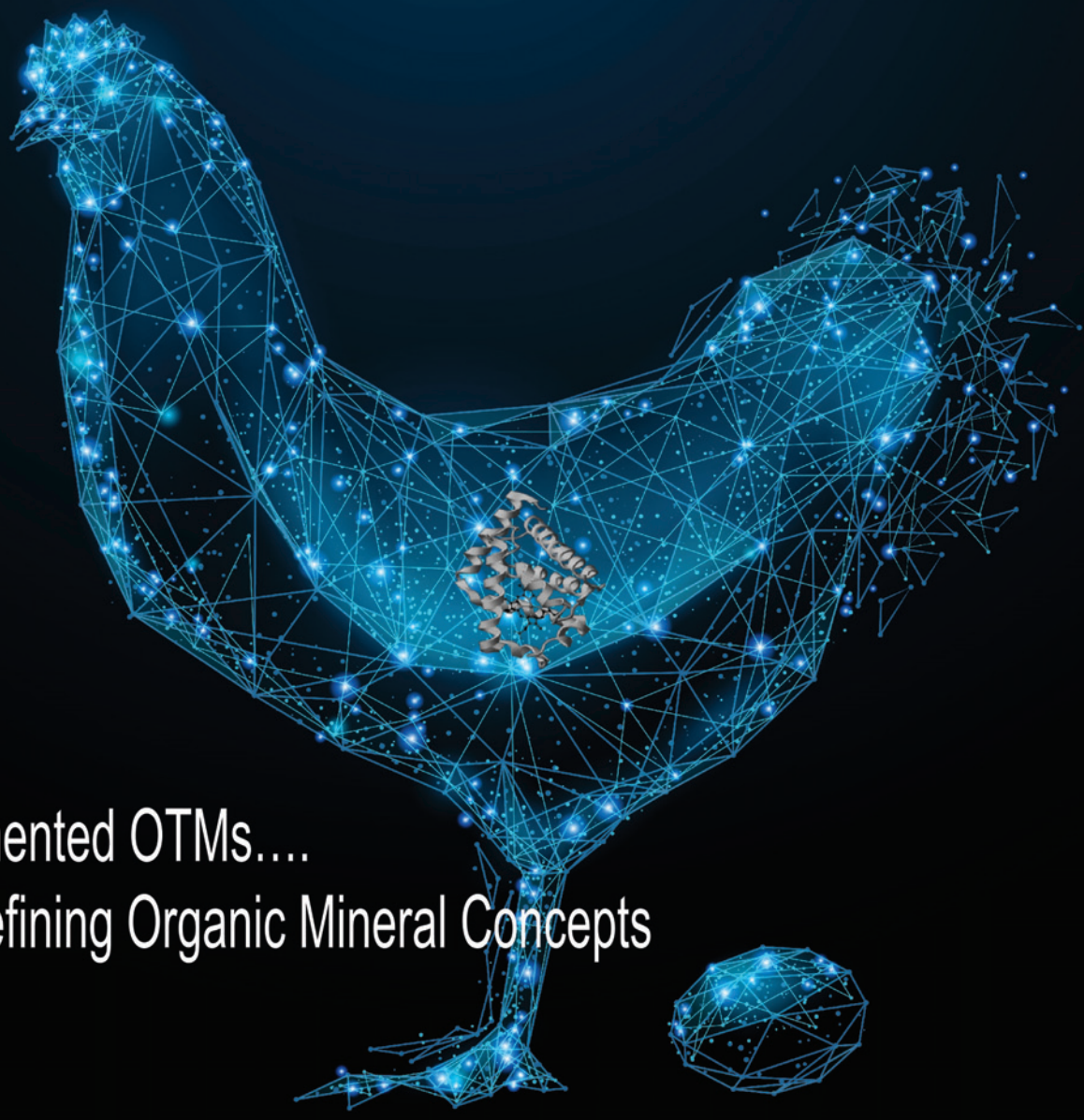
Incorporating oyster mushroom waste into Japanese quail nutrition offers a scientifically backed method to boost operational profitability while raising standards for poultry meat quality.

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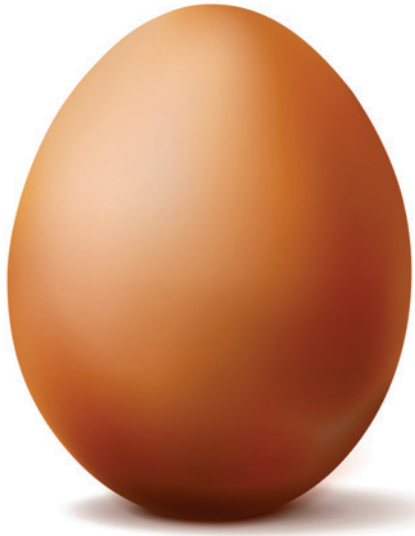
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Article

Climate-Driven Gut Health Disorders in Poultry and its Prevention



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Abstract

Climate change and escalating global temperatures pose severe risks to global poultry production by triggering complex gastrointestinal health disorders. Because poultry lack sweat glands, elevated environmental temperatures induce acute and chronic heat stress, causing a physiological shift that compromises the avian gut—the body's largest immune organ.

This paper reviews the core climate-driven pathologies affecting the avian gastrointestinal tract, notably leaky gut syndrome (increased intestinal permeability), gut dysbiosis (microbial imbalances favouring pathogens like Salmonella and Clostridium), and systemic oxidative inflammation. These conditions culminate in poor nutrient absorption, high feed conversion ratios (FCR), and elevated flock mortality.

To mitigate these losses, this study evaluates critical proactive prevention strategies. Integrating precision nutritional additives (such as betaine, organic acids, and probiotics) with climate-smart housing infrastructure (including tunnel ventilation and water-chilling systems) effectively preserves gut barrier integrity. Ultimately, safeguarding poultry gut health against climate volatility is essential for maintaining global food security, avian welfare, and farm profitability.

Keywords: Climate Change, Heat Stress, Poultry Gut Health, Leaky Gut, Dysbiosis, Precision Nutrition.

Introduction

Climate change and rising global temperatures are severely threatening global poultry production by triggering complex gut health disorders. Because birds lack sweat glands and rely on panting to cool down, they are highly vulnerable to elevated environmental temperatures and humidity.

Prolonged exposure to these conditions compromises the avian gastrointestinal tract (GIT), the body's largest immune organ, leading to decreased nutrient absorption, systemic illness, and reduced productivity.

Climate-Driven Gut Pathologies

1. Leaky Gut Syndrome (Increased Intestinal Permeability)

Under intense heat stress, blood flow is redirected away from the internal organs to the skin to facilitate cooling. This causes intestinal hypoxia (lack of oxygen), which:

- Destroys Tight Junctions: Disrupts the cellular "glue" (proteins) holding the intestinal lining together
- Triggers Systemic Infection: Allows harmful bacteria, toxins, and undigested feed particles to leak directly into the bloodstream
- Damages Histomorphology: Shortens the intestinal villi, severely limiting the surface area available for nutrient absorption.

2. Gut Dysbiosis (Microbiome Disruption)

Climate-induced heat stresses shift the delicate balance of the avian microbiome:

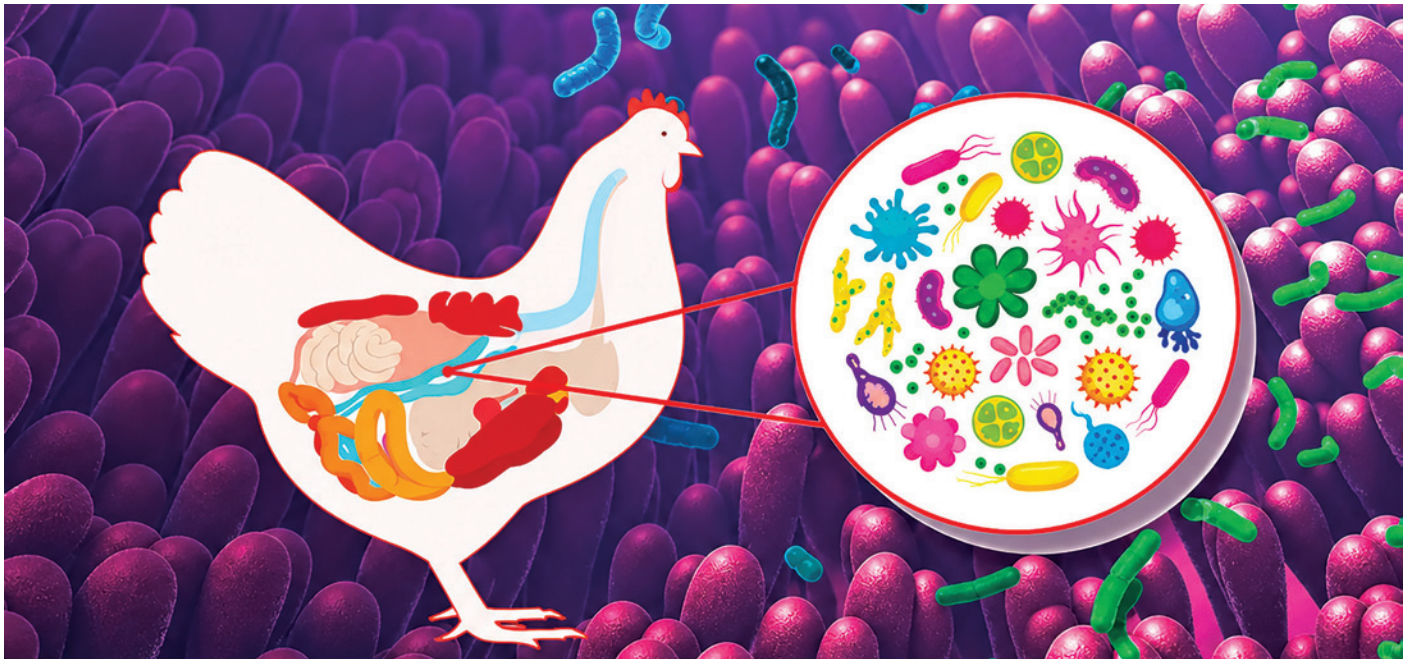
- Pathogen Proliferation: Promotes the overgrowth of opportunistic, harmful pathogens like Salmonella, E. coli, and Clostridium
- Depletion of Beneficial Microbes: Causes a sharp decline in populations of helpful bacteria like Lactobacillus spp., which are vital for volatile fatty acid production and pathogen exclusion
- Altered pH: Changes the pH levels of the gut, making the environment inhospitable for normal digestive flora

3. Oxidative Stress & Systemic Inflammation

- Free Radical Damage: Heat stress accelerates the production of reactive oxygen species (ROS), causing cellular damage to enterocytes (gut cells)
- Immune Dysregulation: The breakdown of the gut barrier triggers the release of pro-inflammatory cytokines, exhausting the Gut-Associated Lymphoid Tissue (GALT) and leaving the bird immunocompromised

Systemic Impact on Poultry Performance

Condition/Symptom	Biological Mechanism	Consequence for Farmers
Respiratory Alkalosis	Panting causes excessive loss of CO_2, altering blood pH	Thin eggshells, lower egg quality
Malabsorption	Damaged gut lining fails to process protein and energy	High Feed Conversion Ratio (FCR)
Immunosuppression	Shrinkage of immune organs (bursa, thymus, spleen)	Vaccine failure; high mortality from secondary infections



Climate-Smart Mitigation Strategies

To combat climate-driven gut disorders, modern poultry management requires integrating both environmental and nutritional interventions:

1. Precision Nutritional Additives

Adding specific compounds to feed or water protects the gut lining and keeps the microbiome stable during heat waves.

- Probiotics & Synbiotics: Deploying live beneficial cultures like Lactobacillus or Bacillus subtilis to crowd out pathogens and maintain gut barrier integrity
- Organic Acids: Supplementing feed with protected butyric acid or propionic acid to lower gut pH, making it hostile to Salmonella and Clostridium
- Phytogenics: Utilising plant-derived compounds like oregano essential oil or thymol to act as natural anti-inflammatories and reduce gut tissue damage
- Osmolytes & Electrolytes: Adding betaine to feed to help intestinal cells retain water, and mixing potassium chloride or sodium bicarbonate into drinking water to prevent respiratory alkalosis
- Antioxidants: Increasing dietary Vitamin C and Vitamin E alongside organic selenium to neutralise the dangerous free radicals generated by the damaged cells
- Metabolite Modulation: Using butyrate-producing bacterial strains or precursors to accelerate gut barrier repair
- Feeding Adjustments: Shifting feeding schedules to the cooler parts of the day (early morning/late evening) to reduce the metabolic heat increment generated by digestion

.

2. Climate-Smart Housing & Water Management

Structural & Management Interventions: Physical infrastructure must keep the birds' environmental temperature as close to their comfort zone as possible.

Habitat Modifications: Deploying tunnel ventilation, evaporative cooling pads, and automated misting systems to keep the ambient temperature within the bird's thermoneutral zone.

- Tunnel Ventilation: Ensuring a high air velocity (at least 2.5 to 3.0 meters per second) directly over the birds to maximise wind-chill cooling
- Evaporative Cooling Pads: Maintaining pad systems cleanly to drop incoming air temperatures by 4–7°C during peak ambient heat
- Water Line Chilling: Keeping drinking water below 25°C using insulated or chilled lines, as birds will refuse to drink warm water, drastically accelerating heat stress
- Roof Mitigation: Applying reflective white paint to the house roof and installing overhead insulation to block radiant solar heat

Conclusion

Climate-driven gut health disorders represent one of the most critical threats to modern poultry production, directly bridging environmental changes with severe physiological stress. Rising global temperatures do not merely cause discomfort; they actively dismantle the bird's gastrointestinal tract, leading to leaky gut syndrome, systemic inflammation, and severe microbial imbalances.

Ultimately, preventing these disorders requires moving away from reactive treatments and adopting a proactive, dual-layered strategy. By combining precision nutrition (such as osmolytes, organic acids, and probiotics) with climate-smart infrastructure (like automated tunnel ventilation and chilled water lines), producers can shield the avian gut from thermal shock. Securing gut integrity under changing climatic conditions is no longer just a welfare consideration—it is a fundamental requirement for maintaining global food security and farm profitability.

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Article

Something Fishy, Festive and Fingerlicking

SHRIDHAR speaks



Tarun Shridhar
Director General, Indian Chamber of Food and Agriculture, and former Secretary, Ministry of Fisheries, Animal Husbandry and Dairying, Govt.of India

A chicken dish may start a conversation. A fish dish could start a debate. Which fish? From which river? Caught in which season? Cooked with mustard or coconut? And, most dangerously, whose mother prepares it best?

Ask these questions at a Bengali dining table and you may have enough material for another article before lunch arrives.

Fish has this extraordinary ability to become much more than food. It carries the smell of a coast, the memory of a river, the bustle of a market and the affection of a family kitchen. We may describe it as "seafood" on a fashionable menu, but much of India's relationship with fish begins far from the sea, in ponds, rivers, lakes and wetlands.

Let us, therefore, put aside the production statistics for a while. There is a time to discuss tonnes and trade. This is a time to savour the aroma.

Bengal: A little mustard, a great deal of emotion

Any journey through India's fish dishes must make room for *shorshe ilish*: hilsa cooked in mustard gravy. Few combinations achieve so much with so little. Mustard, green chillies and mustard oil meet the rich flavour of the fish; rice provides the quiet companionship that makes the meal complete.

Then there is *bhapa ilish*, its steamed relative, in which mustard forms the heart of the preparation, sometimes joined by coconut and yoghurt. Neither dish needs a long parade of ingredients. The cook's task is to understand the fish and know when to stop.

Hilsa, however, demands attention. Its fine bones discourage hurried eating; a valuable contribution to civilisation. It persuades us to put down the phone and concentrate on lunch.

For everyday comfort, Bengal turns to *macher jhol*, a lighter fish curry, often made with rohu or catla. Hilsa may receive the applause, but jhol does much of the daily work. Every cuisine needs both its celebrated performer and a dependable friend.

Assam: Pleasure of a little sourness

Travel east and *masor tenga* offers a refreshing change of mood. This Assamese fish curry takes its character from sour ingredients: tomatoes, elephant apple or other locally favoured souring agents, depending on the season and household.

The gravy is light, the flavour pleasantly tangy. With rice, it makes a meal that leaves you satisfied without feeling you have undertaken a sporting challenge.

There is a lesson here for those who believe that memorable Indian food must always be heavily spiced. Sometimes a gentle sourness and a well-chosen piece of fish are enough.

Tenga also reminds us how closely a kitchen follows its surroundings. A fruit growing nearby can shape a dish as decisively as a spice brought from afar. The landscape quietly writes the menu.

Odisha: Mustard has another address

Bengal does not hold exclusive rights to mustard. Odisha's *machha besara*, fish cooked in a mustard-based gravy, makes that point deliciously.

Mustard, turmeric and garlic commonly shape the preparation, although, as with most household dishes, there are variations. The resulting curry has a robust character that sits comfortably beside rice.

Regional boundaries on maps are precise. Those in kitchens are more accommodating. Ingredients travel, neighbours learn from one another, and a familiar preparation acquires a different accent.

Try telling a devoted cook that the dish is "almost the same" as one from the neighbouring state, you will soon discover how much difference that "almost" contains.

Kerala: A fish wrapped like a present

In Kerala, *karimeen pollichathu* turns a meal into a small ceremony. Karimeen, or pearl spot, is coated with a seasoned masala, enclosed in a banana leaf and cooked. Many versions first lightly fry the fish before finishing it in the leaf.

The parcel arrives at the table looking modest. Open it and the fragrance does the announcing. The leaf holds the fish and masala together, retaining moisture and lending its own subtle aroma.

Long before elaborate restaurant presentations, the home kitchen knew the pleasure of revealing a dish at the table.

Kerala offers a gentler experience in *fish moilee*. Coconut milk, ginger, green chillies and curry leaves commonly come together in a pale, fragrant gravy. Paired with appam, whose soft centre welcomes the sauce, it is a persuasive answer to anyone who thinks fish curry must be fiery red.

One state, two very different moods.

Goa: Rice, fish and the business of living

Goa's beaches draw attention; its fish kitchens too deserve a substantial share.

Goan fish curry and rice have the reassuring familiarity of a daily meal. Coconut gives body to many versions; sourness may come from kokum or another ingredient favoured by the household. The fish depends on the catch and the cook. There is no single pot into which all of Goa can be poured.

Then comes *recheado*, a preparation

with a more assertive personality. Mackerel is a much-loved choice, slit and filled with a red masala whose chillies, spices and vinegar bring heat and tang before the fish is fried.

The name comes from the Portuguese word for "stuffed", a small reminder of the journeys that have shaped Goan food. History need not be delivered as a lecture; it can arrive crisp, fragrant, accompanied by rice.

The Parsi table: Good things come in green parcels

Another banana-leaf parcel awaits us in *patrani machhi*, a celebrated Parsi preparation associated with festive meals and weddings.

Fish, often pomfret, is covered with a green chutney built around coconut and coriander, with chillies and a carefully judged balance of sweet and sour. Wrapped in a banana leaf, it is steamed until tender.

The pleasure lies in balance: too much of any one element and the conversation becomes an argument; get it right, and the fish and chutney sing melodiously together.

Compare it with Bengal's *paturi*, where mustard often leads the flavour, or Kerala's *pollichathu*. The wrapping may look familiar, but each parcel has something different to say. We have been exchanging culinary ideas since long.

Mumbai: The swimming duck

A newcomer encountering *Bombay duck* on a menu could reasonably expect poultry. It ain't no duck, but a fish known locally as bombil.

Fresh bombil is delicate and soft. In the much-loved fried preparation, a seasoned coating, often involving semolina or flour, gives it a crisp exterior while the flesh remains tender.











> A fish dish could start a debate. Which fish? From which river? Caught in which season? Cooked with mustard or coconut? And, most dangerously, whose mother prepares it best?

It is the sort of dish best eaten promptly. A prolonged photo session serves it poorly. The camera may have its meal later; yours is ready now.

Bombil also appears dried in coastal food traditions, with a stronger aroma and a different culinary role. The contrast reminds us that preserving food creates distinctive tastes of its own. Freshness and tradition have more than one relationship.

Amritsar: The coast is optional

For the final stop, let us head inland. *Amritsari fish* makes a convincing case that proximity to the sea is unnecessary for a memorable fish dish.

Pieces of fish are seasoned and coated in a gram-flour mixture, with ajwain supplying a characteristic fragrance, then fried until golden. Lemon and chutney make cheerful companions tingling the taste buds. No elaborate explanation is required.

Amritsar is famous for its generous food, and fish fits comfortably into that reputation. Order a plate to share and be amazed how quickly it disappears.

More than a good lunch

This journey could continue. Tamil Nadu's *meen kuzhambu*, Andhra Pradesh's *chepala pulusu* and the fish curries of the Konkan would all deserve another helping of attention.

What makes these dishes iconic is their place in people's lives. They belong to ordinary lunches, family celebrations, market visits, festivals… Often, the recipe survives through a hand demonstrating a quantity rather than a spoon measuring it.

Behind every plate are people who catch, farm, transport, sell and cook the fish. And behind their livelihoods are waters that need care. Keeping these food traditions alive also means allowing fish to breed, respecting fishing restrictions and protecting rivers, wetlands and coasts.

But let us finish at the table. Open the leaf. Spoon the gravy over the rice. Squeeze the lemon over the crisp fish.

India has many languages. A satisfied silence after the first mouthful needs no translation.

COVER

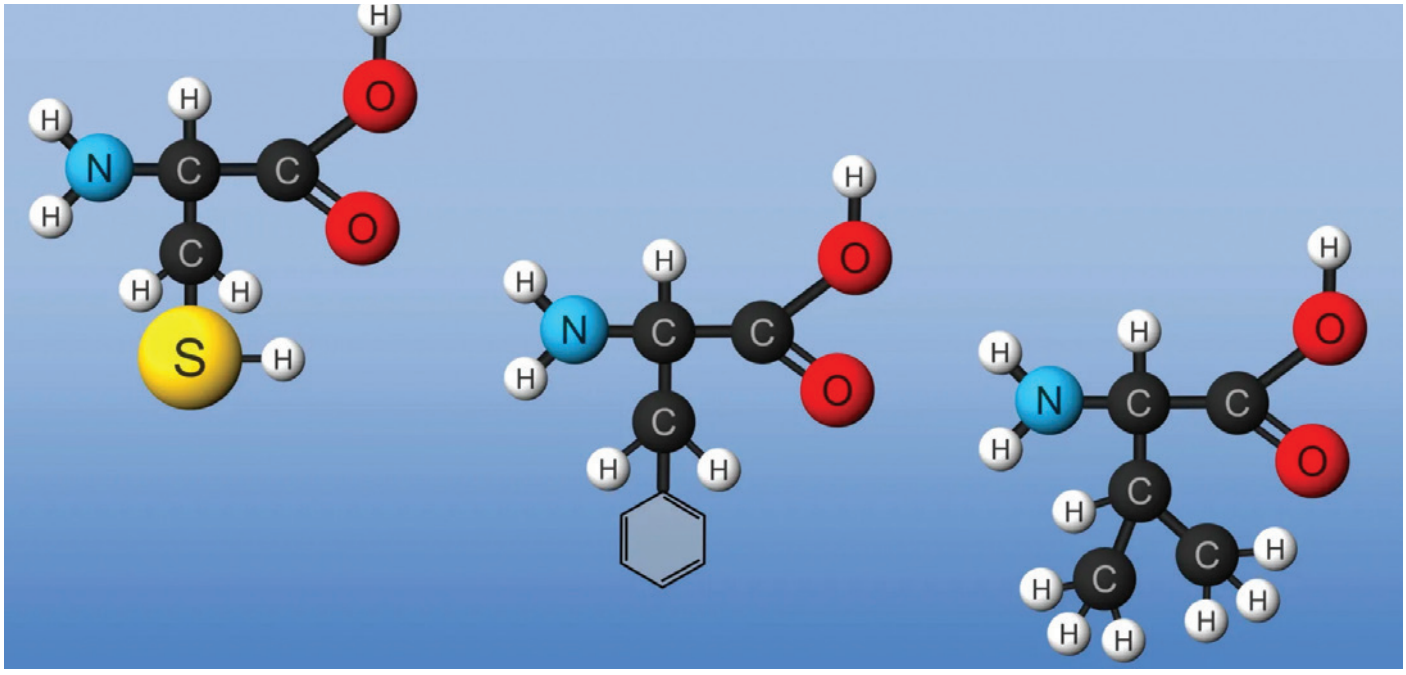


THE AMINO ACID ADVANTAGE

Decreasing dietary crude protein while ensuring sufficient amino acid levels is a highly effective approach to lower nitrogen waste, ammonia release and the environmental impact of poultry farming. **Dr. Partha P. Biswas**, Former Associate Professor & H.O.D. Dept. of Zoology, R. K. Mission V. C. College, dissects the amino acid profile of a diet for **IPR**, linking precision nutrition to palatability in ways only now being appreciated

The poultry sector is vital to global food security, supplying both meat and eggs that make up a major share of the world's animal protein. With poultry accounting for roughly 40% of global meat consumption and eggs serving as an important protein source, optimising chicken nutrition is essential for sustaining a stable food system—and amino acid (AA) nutrition is central to this effort. Modern poultry feeding has shifted from crude protein towards digestible amino acids, enabling greater precision and reduced nitrogen excretion. This approach directly shapes pullet health, laying performance in hens, and broiler growth, while also influencing feed efficiency, environmental impact, and immune function. Ongoing advances in AA nutrition, feed formulation, digestibility evaluation, and precision feeding have steadily improved chicken performance over time. Amino acids are the basic structural units of proteins, grouped into two categories: non-essential (synthesised by the body) and essential (not produced internally). Essential amino acids (EAAs) are particularly important for chickens because they cannot be made within the body, so they must be supplied through feed to support growth, egg production, and immunity. The EAAs for poultry include methionine and cysteine (methionine being a precursor of cysteine), lysine, threonine, tryptophan, arginine, valine, isoleucine, leucine, histidine, and phenylalanine. Once absorbed, amino acids are rearranged and assembled into the proteins that build various body tissues. Perhaps the most intriguing recent development lies at the intersection of amino acid nutrition and gustatory biology.

Chickens possess a functional taste system that can detect amino acids, and the expression of amino acid sensing receptors in the oral cavity. This means that the amino acid profile of a diet may influence not only the metabolic fate of absorbed nutrients but also the very act of feed selection and consumption, linking precision nutrition to palatability in ways only now being appreciated.



Low-Crude Protein Diets: Sustainability and Performance

Decreasing dietary crude protein while ensuring sufficient amino acid levels is a highly effective approach to lower nitrogen waste, ammonia release, and the environmental impact of poultry farming. By cutting CP by 2 percentage points and providing suitable crystalline amino acid supplements, nitrogen excretion can be decreased by about 20-30% without affecting broiler growth or feed efficiency. Recent results indicate that, with sufficient essential amino acids and glycine equivalents, dietary crude protein can be lowered to about 16% without affecting broiler growth performance, while also enhancing nitrogen utilisation efficiency to over 80%. When CP is below 16%, asparagine, glutamine, or general amino-nitrogen might limit growth, marking the next challenge for precise amino acid nutrition. Despite this, creating a low-CP diet presents numerous obstacles.

When dietary CP falls below approximately 16-19%, glycine equivalents (glycine + serine, which are interconvertible) become the first-limiting non-essential amino acid, and endogenous synthesis becomes insufficient to meet metabolic demand. Glycine is a precursor for uric acid synthesis, the primary nitrogen excretion route in birds, and each uric acid molecule requires one glycine molecule for purine ring formation. Thus, paradoxically, reducing dietary protein reduces the nitrogen load but may simultaneously increase the demand for glycine in uric acid synthesis, making glycine supplementation necessary in very low-CP diets. The Gly is required for the synthesis of antioxidant molecules such as glutathione and creatinine to maintain cellular functions in the liver.

Amino Acids Are Highly Functional Nutraceuticals

The word "nutraceutical" combines "nutrition" and "pharmaceutical." These are medicinal foods that help maintain wellbeing, regulate immune function, and promote overall health, thereby aiding in both the prevention and treatment of specific diseases. In poultry, amino acids are recognised as nutraceuticals because they support muscle protein synthesis, enhance bird health, strengthen immunity, and preserve gut integrity. These function as therapeutic agents that help prevent disease and can serve as substitutes for antibiotic growth promoters. Carefully supplementing synthetic amino acids in poultry feed can enhance the overall amino acid profile while simultaneously reducing crude protein content. In addition, balancing amino acid levels in poultry diets is important for minimising energy losses that can otherwise lead to fat accumulation. Research has shown that providing protein-rich, energy-dense diets to pullets during their growth and laying phases improves both egg mass and yolk weight. Including amino acids in the diet also reduces nitrogen losses during protein metabolism, which lowers ammonia emissions into the environment while improving growth performance in birds. Healthy broilers respond positively to higher dietary amino acid levels, resulting in better overall performance. Combining amino acids with chelated trace minerals in feed can further support gut health by mitigating the effects of heat stress. Supplementing amino acids also boosts the production of caecal butyric acid and total short-chain fatty acids, which contribute to improved growth, development, feed conversion efficiency, and stronger immunity.

Taste Sensitivities to Amino Acids in Chickens

Taste is essential for animals to identify nutrients and detect harmful substances in food, and it strongly influences their feeding behaviour. Decoding the taste-sensing mechanism in chickens can deepen our understanding of poultry nutrition and assist in creating novel alternative feed ingredients. Compared to layer-type chickens, broiler-type chickens are equipped with more taste buds, indicating potentially heightened taste perception. Birds showed a greater preference for Methionine in comparison to Tryptophan. Methionine is acknowledged as one of the primary limiting amino acids in diets for broilers. Predicted taste genes for umami, sour, salt, bitter, calcium and lipids are present in the chicken. Umami is one of the basic taste modalities and is commonly associated with savoury or protein-rich foods. It is linked to dietary protein and helps detect certain L-amino acids, such as glutamic acid (Glu). In humans, umami is primarily triggered by acidic amino acids like glutamate and aspartate. The taste system consists of a group of nutrient sensors evolved to evaluate the nutritional quality and content of foods. Birds have lower taste bud numbers than mammals which has been assumed as a proof of lower taste acuity. Lysine preference increased with concentration, while Threonine and Tryptophan showed decreased preference. The elucidation of chicken taste-sensing systems will not only expand our knowledge of the evolution of vertebrate taste-sensing systems, but will also add to our understanding of poultry nutrition and to the development of new feedstuffs.

Taste Buds of Chickens

Taste plays a crucial role in influencing nutritional choices and encouraging food consumption. Unlike mammals, the avian tongue is not the major sensory organ. Early reports indicated that chickens possessed a limited number of taste buds, but recent research suggests they actually have a sophisticated, non-lingual taste system. Chicken taste buds are located in both the anterior and posterior areas of the oral cavity. They are primarily distributed across three regions of the oral epithelium:

- The palate (approx. 69%): Including the anterior maxillary gland opening, middle palatine papilla, and posterior regions
- The base of the oral cavity (approx. 29%): Located in the anterior mandibular gland region
- The posterior tongue (approx. 2%): Found in the ventrolateral regions of the keratinised anterior tongue and behind the lingual spine

Unlike humans, whose taste buds are concentrated on the tongue, a chicken's sensors are strategically distributed throughout the oral cavity. Recent molecular labeling has detected up to 500 taste buds in the palate and 260 at the base of the oral cavity. Broiler-type chickens have more taste buds than layer-type chickens. This difference in taste bud count suggests that broilers may possess greater gustatory sensitivity, which could be linked to their rapid growth rates and higher nutritional demands. Understanding the distribution and function of chicken taste buds is essential for improving feed palatability, designing better feeding regimens, and developing new feedstuffs that align with the bird's natural taste preferences and nutritional requirements.

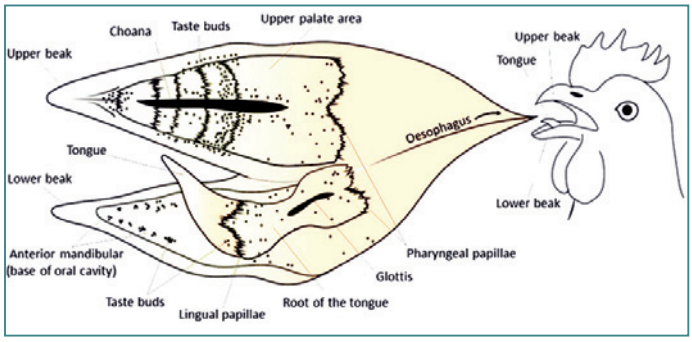


Fig. 1: Distribution of taste buds in the oral topography of chicken Chicken taste buds are mainly found in the back of the mouth, with around 300 to 400 buds in chicks. Most of them are on the palate, making up about 69%, then on the base of the mouth, which is about 29%, and a small number are on the back of the tongue, which is only about 2%. These buds are usually close to where the saliva comes out, and there are very few on the front of the tongue or the beak

Importance of Amino Acids in Poultry Birds

Poultry have an operational gustatory system that detects amino acids, influencing feed consumption, flavour preference, and nutritional control. Palatability and acceptability, which are the two factors that define a bird's palate. Understanding how AAs react at various concentrations is essential for creating successful feeding regimens that enhance poultry diets and boost production efficiency. In standard corn-soybean poultry feed, the amino acids that are limited generally appear in this sequence: Methionine (1st), Lysine (2nd), Threonine (3rd), and Valine (4th). Enhancing these is vital for optimising feed efficiency and reducing nitrogen waste, particularly when decreasing crude protein content in broiler and layer diets. For young birds, glycine is considered essential. The non-essential limiting amino acids found in poultry diets are glycine and serine. Methionine and phenylalanine are regarded as semi-essential amino acids since they can be converted into cysteine and tyrosine.



Fig. 2: Getting the right amount of amino acids is very important for hens to lay eggs well. Research says that hens need about 415 mg of digestible methionine each day. This is more than what was suggested before because today's hens lay more eggs than in the past

Methionine

DL-Methionine, which includes both D and L isomers that birds can effectively utilise, is the primary limiting amino acid in poultry diets. When natural methionine levels in feed are inadequate, supplementation becomes necessary. Methionine is essential for protein synthesis and acts as an antioxidant, serving as a precursor for cysteine and glutathione through the transsulphuration pathway and methionine sulphoxide reduction. It is vital for optimal bird growth, supporting feather development, muscle tissue growth, and key biochemical functions as a methyl group donor. Furthermore, it plays a role in DNA methylation, removal of reactive oxygen species (ROS), and serves as a precursor to glutathione (GSH)—a tripeptide that reduces oxidative stress and protects cells from oxidative damage. Supplementing dietary methionine has been shown to improve growth performance in broiler chickens at 42 days of age.

Threonine

Threonine (Thr), also known as α-amino-β-hydroxybutyric acid, is an essential amino acid in animals that must be obtained through the diet. It is recognised as the third limiting amino acid in corn-soybean meal-based broiler diets. Threonine is critical for protein synthesis and bodily maintenance, and it is a major component of mucin, which supports intestinal health. It also plays an important role in key metabolic processes such as uric acid production. After absorption, threonine contributes to the formation of gut proteins, helping to protect the intestinal lining from anti-nutritional factors and pathogens. Supplementing poultry diets with threonine at levels above NRC (National Research Council) recommendations—typically 110% to 125% of suggested levels—is widely recognised as a "functional" amino acid strategy. This approach enhances performance through improved feed conversion, superior carcass quality, and better overall gut health, along with increased ileal protein digestibility and stronger immunity.

Cysteine

Methionine and cysteine are the primary sulphur-containing amino acids and play a crucial role in animal nutrition. Cysteine is classified as a semi-essential amino acid because it can be synthesised from methionine and serine through the

trans-sulphuration pathway. For this reason, its dietary requirement is typically evaluated together with methionine. Cysteine has been found to be approximately thirteen times more abundant in broiler feathers than methionine, underscoring its importance in feather growth and development. It performs essential functions in protein structure and activity, and also provides protection against oxidative stress. Cysteine serves as a foundational component for key antioxidant defense molecules, including glutathione (GSH)—a metabolite directly linked to cysteine and indirectly to methionine. Beyond methionine, cysteine can improve intestinal histomorphometric parameters in broilers, leading to better nutrient absorption. Recent research has highlighted the importance of maintaining the correct methionine-to-cysteine supplementation ratio (MCR) in broiler diets. An optimal balance between these two amino acids is essential for maintaining antioxidant defence and intestinal health, particularly under disease challenge conditions such as coccidiosis. A 2026 study on Ross 308 broilers demonstrated that adequate sulphur amino acid nutrition, including cysteine, is critical for both performance and feather quality in broilers.

Arginine

Arginine is a critical, essential amino acid in the poultry industry, as chickens cannot synthesise it internally. Supplementing diet with arginine beyond standard recommendation enhances broiler growth performance, improves immune response, supports gut health, reduces fat accumulation, and mitigates heat stress. Arginine influences bone development through its involvement in the formation of collagen and connective tissue, and by stimulating the release of growth hormone, which acts on the epiphyseal growth plate. This plate is a cartilaginous region located between the epiphysis (the end of a long bone) and the metaphysis (the shaft side) in growing birds. It is the primary site where endochondral ossification, the process by which cartilage is progressively replaced by bone. Elevated arginine levels have been shown to alleviate oxidative stress, stimulate protein synthesis, improve antioxidant capacity, and enhance both humoral and cell-mediated immunity. Arginine must be sufficiently available in the chicken diet to maintain the immunological and physiological functions and to support protein accretion. This amino acid can also serve as a potential immunomodulating agent to improve immune function in broiler chickens. The addition of arginine in broiler diets has been shown to improve growth performance in chickens at 42 days of age.

Glutamine

It is a so-called non-essential amino acid because it can be synthesised endogenously by chickens. Glutamine is known to provide nitrogen and energy source for the proliferation of immune and intestinal mucosal cells and is required together with cysteine to synthesise antioxidants such as glutathione. Glutamine is also an essential nutrient for animals under stress conditions, such as infection, injury, high temperature. Dietary L-glutamine supplementation improves growth performance, gut morphology, and serum biochemical indices of broiler chickens during necrotic enteritis challenge.L-glutamine compensates for metabolic losses from this infection, improves the intestinal development and gut morphology, improves growth performance and serum biochemical indices.

Lysine

It is one of the limiting amino acids in the poultry diet. It has been found that additional lysine in broiler diets optimises body weight gain, whereas a low level of lysine decreases growth and live weight. There are positive effects on meat yield and growth performance in response to supplemental lysine and methionine in male broiler diets from 21 to 41 days of age. Lysine is found to improve carcass quality and growth performance of broilers. Finally, the main role of lysine is to participate in protein synthesis, cell growth, maintenance, and is considered as a reference amino acid in the ideal protein diet. Feeding diets with excess lysine may appear to be beneficial at the beginning of lay as it provides higher peak egg production compared with lower lysine.

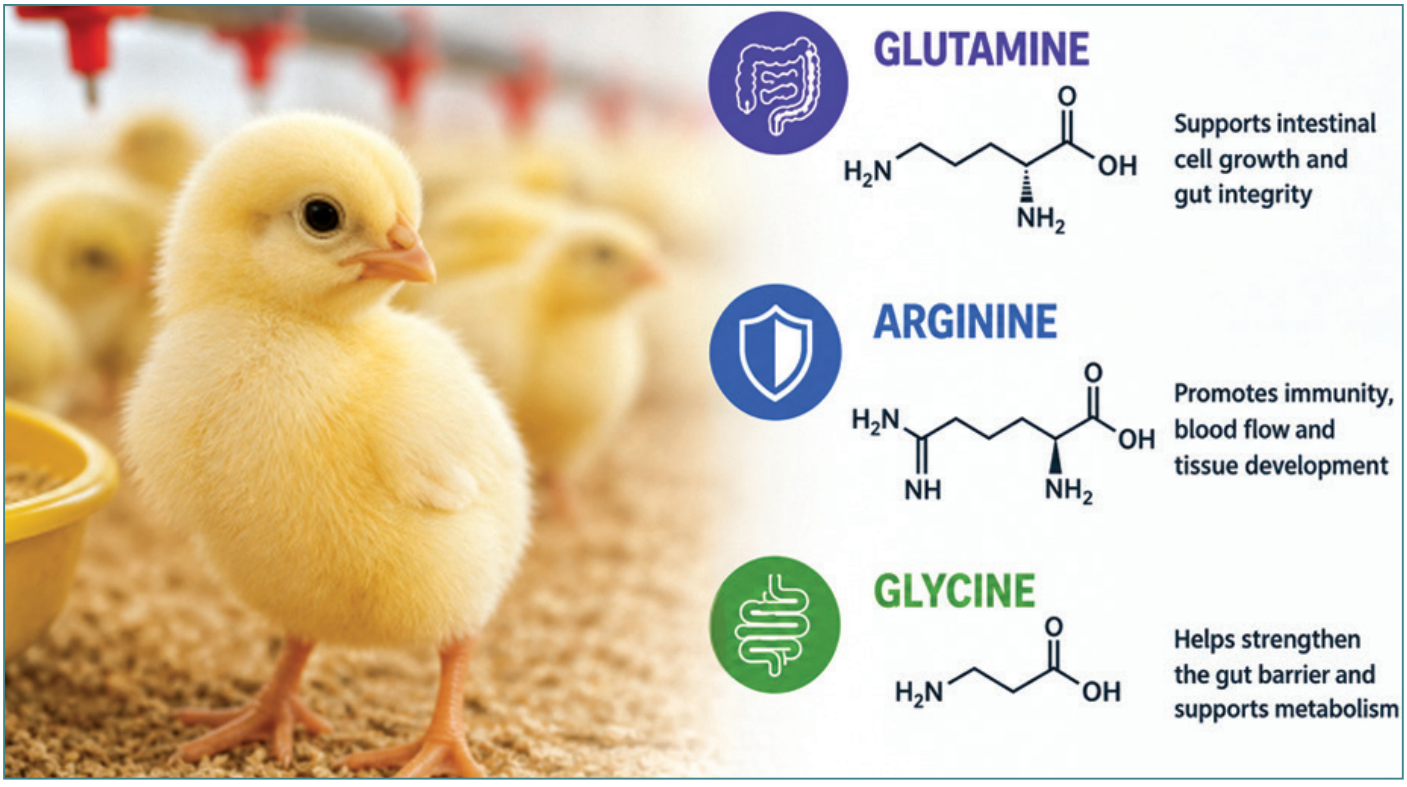


Fig.3: Adequate amino acid intake during the initial days of life enhances gut health, boosts immunity, and promotes improved growth



Glycine

Glycine (Gly) is the simplest amino acid and, although classed as non-essential for poultry because birds can synthesise it endogenously, it is increasingly recognised as a functional and, under certain conditions, conditionally essential nutrient. Gly serves as a precursor for the synthesis of collagen, creatine, porphyrins, glutathione, bile acids, nucleic acids, and uric acid, and additionally acts as a biological osmolyte. Moreover, enhanced dietary Gly supplementation improves water holding capacity in breast meat, promoted liver health, and benefit intestinal morphology likely by alleviating oxidative stress and the stress response. A 2024 dose-response trial using 1,600 broilers raised under cyclic heat stress (29°C for 10 h/d) showed that increasing dietary Gly supplementation up to 1.6% linearly improved feed conversion ratio, with the 1.6% level matching the performance of a higher-energy "hot-season" control diet.

Key Takeaway Points

- Precision over Crude Protein: Modern poultry nutrition prioritises digestible amino acids over crude protein, which maximises growth and egg production while significantly reducing environmental nitrogen waste.
- Amino Acids as Nutraceuticals: Beyond basic nutrition, amino acids act as therapeutic agents that boost immunity, improve gut health, combat heat stress, and can serve as alternatives to antibiotic growth enhancers.
- Targeting Limiting Amino Acids: In standard corn-soybean diets, Methionine, Lysine, Threonine, and Valine are the primary limiting amino acids and require careful supplementation to optimise feed efficiency and carcass quality.
- A Sophisticated Taste System: Contrary to past beliefs, chickens possess a complex, non-lingual taste system with up to hundreds of taste buds distributed primarily across the palate and the base of the oral cavity.
- Nutritional Sensing and Feeding Behaviour: Chickens are exceptionally sensitive to essential amino acids and rely on their specialised taste system to evaluate food quality, sometimes even developing conditioned taste aversions to specific nutrients.

Future Directions in Poultry Amino Acid Nutrition

Glycine equivalents (glycine plus serine) are now firmly recognised as the primary limiting non-essential amino acid when broiler crude protein levels fall below approximately 19% in young birds, allowing safe reduction to about 16% without hindering growth; below 16%, asparagine, glutamine, or non-specific amino nitrogen likely become limiting and are still poorly quantified. A 2024 study formalised this understanding by developing a dynamic glycine-allowance model for low-protein broiler diets, yet the optimal levels of asparagine and glutamine for diets below 16% crude protein still require precise definition. The interaction between dietary amino acids and the gut microbiome is increasingly well documented. Graded glutamine supplementation (optimal around 6 g/kg) improved growth, intestinal morphology, immunity, and altered caecal microbial composition in broilers, while tryptophan supplementation similarly affected caecal microbial diversity. However, the reverse relationship — how microbiota-derived metabolites regulate amino acid absorption and metabolic utilisation — remains a significant knowledge gap. Feed intake and taste are directly influenced by protein and amino acid composition. A 2025–2026 study showed that reducing crude protein and essential amino acids alters mRNA expression of the T1R1 and T1R3 amino acid taste sensors and modifies feeding behavior in broilers, and standardised behavioral assays for assessing broiler taste preferences are now under development. The influence of crystalline amino acid inclusion levels and different amino acid mixtures on palatability and consumption still requires systematic investigation. Precision nutrition is progressing through dynamic requirement models that adjust amino acid needs based on real-time feed intake, growth, and environmental data. A 2025 growth and amino acid requirement model, dynamic prediction frameworks for broiler amino acid needs, and the integration of metabolomics to identify amino acid imbalances and customise feeding strategies based on individual bird genotype, health, and environment all exemplify this trend.

Conclusion

Current research indicates that chickens can learn to avoid certain amino acids like L-Val, L-Lys, and L-His by developing a dislike for their taste, a process called conditioned taste aversion. They also strongly avoid L-Arg. These findings suggest that chickens are especially sensitive to essential amino acids, such as L-Lys, which is a key limiting nutrient in their diet. This sensitivity is quite different from humans, who mostly associate acidic amino acids with the umamiflavor. Also, even though chickens don't have the sweet taste receptor found in mammals, they have learned to avoid sweet-tasting substances like glucose, galactose, sucrose, and maltose through conditioned taste aversion.



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IPEMA-Poultry India Strengthens Industry Collaboration at PFI AGM

IPEMA-Poultry India participated in the 37th Annual General Meeting of the Poultry Federation of India (PFI) held in Kochi on 23rd & 24th September 2026, bringing together more than 950 participants from across the poultry sector.

The two-day programme provided a platform for industry dialogue and knowledge exchange, with discussions covering bird health and nutrition, feed security, farm technology, indigenous vaccines and waste-to-wealth initiatives. The launch of Mission Protein India and its mascot was another highlight.











Uday Singh Bayas, President, IPEMA-Poultry India, emphasised the poultry sector's contribution to nutrition security, rural employment and affordable animal protein. He highlighted challenges including feed costs, dependence on maize and soybean, disease, antimicrobial resistance, climate stress and sustainability, calling for stronger coordination among government, research institutions and industry.

IPEMA-Poultry India also used the AGM to promote greater adoption of Indian technology, equipment and automation.

NATIONAL

IPEMA-Poultry India Calls for a Unified Industry Voice

IPEMA-Poultry India participated in the 67th National Symposium of CLFMA of India, held in Mumbai on 11th and 12th September 2026, which brought together policymakers, industry leaders and representatives of major national associations. Themed "Animal Agriculture—The Backbone of Sustainable Development," the symposium addressed feed security, productivity, farmer resilience, innovation, trade and policy coordination.

A key highlight was the "One Nation, One Voice" panel, moderated by Mrityunjay Jha of Zee Business, with leaders from





poultry, feed and aquaculture associations. Representing IPEMA-Poultry India, President Uday Singh Bayas emphasised the need for greater alignment among industry associations to strengthen policy engagement and address shared challenges.

The discussion underlined that poultry is an interconnected ecosystem spanning farmers, feed, equipment, animal health, technology, processing and allied sectors. A coordinated industry voice, participants noted, can strengthen representation and support sustainable growth.

IPEMA-Poultry India also invited the poultry fraternity to Poultry India Expo 2026, scheduled for 25th to 27th November 2026 at HITEX, Hyderabad, under the theme "One Nation, One Expo."



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ROSS 308 AP BEST ACHIEVERS AUGUST -2026

Aviagen INDIA

Northern Region

COMPANY: Sampoorna Feeds
FARMER NAME: Mr. Chamkaur Singh



AUG-2026	Top #1
Farm Type	Open House
State	PUNJAB
Chicks Placed	5,332
Mean Age	33
Avg Body Wt	2,596
FCR	1.31
cFCR	1.17
Livability%	97
Daily Gain	77.8
EPEF	576

Eastern Region

COMPANY: IB Group
FARM NAME: Mrs. Kadambini Senapati



AUG-2026	Top #1
Farm Type	Closed House
State	ORISSA
Chicks Placed	6,460
Mean Age	38
Avg Body Wt	2,876
FCR	1.56
cFCR	1.36
Livability%	96.7
Daily Gain	75.7
EPEF	469

Central Region

COMPANY: IB Group
FARMER NAME: Mr. Sameer Sharma



AUG-2026	Top #1
Farm Type	Closed House
State	MADHYA PRADESH
Chicks Placed	17,161
Mean Age	42
Avg Body Wt	3,288
FCR	1.52
cFCR	1.23
Livability%	95.7
Daily Gain	78.3
EPEF	492

South Region

COMPANY: IB Group
FARMER NAME: V.Satyanarayana Y



AUG-2026	Top #1
Farm Type	Closed House
State	ANDHRA PRADESH
Chicks Placed	19,306
Mean Age	36
Avg Body Wt	2,621
FCR	1.48
cFCR	1.35
Livability%	95.3
Daily Gain	72.8
EPEF	466

August 2026 -Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age(Days)	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North Closed House	11,908	34	2,612	1.33	1.19	97.2	76.4	558
North Open House	5,332	33	2,596	1.31	1.18	97.0	77.8	576
East Closed House	6,460	38	2,876	1.56	1.37	96.7	75.7	469
East Open House	1,407	40	2,687	1.42	1.27	98.2	67.2	463
Central Closed House	17,161	42	3,288	1.52	1.24	95.7	78.3	492
Central Open House	6,591	31	2,242	1.41	1.36	95.3	70.3	476
South Closed House	19,306	36	2,621	1.49	1.35	95.3	72.8	466
South Open House	5,881	42	2,856	1.56	1.37	95.2	68	416

August 2026 -Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	OPEN HOUSE	PUNJAB	5,332	33	2,596	1.31	1.18	97.0	77.8	576
Flock 2	CLOSED HOUSE	PUNJAB	11,908	34	2,612	1.33	1.19	97.2	76.4	558
Flock 3	OPEN HOUSE	PUNJAB	11,632	35	2,652	1.37	1.23	95.7	75.8	529
Flock 4	OPEN HOUSE	PUNJAB	11,944	33	2,373	1.33	1.25	97.1	71.3	520
Flock 5	OPEN HOUSE	PUNJAB	15,606	34	2,564	1.38	1.25	95.7	75.0	520
Flock 6	OPEN HOUSE	PUNJAB	8,080	33	2,306	1.32	1.25	97.0	70.2	516
Flock 7	OPEN HOUSE	PUNJAB	11,140	33	2,326	1.31	1.24	97.1	69.6	516
Flock 8	OPEN HOUSE	PUNJAB	13,461	33	2,380	1.34	1.26	96.5	71.5	514
Flock 9	OPEN HOUSE	PUNJAB	11,020	34	2,500	1.36	1.25	96.2	72.7	514
Flock 10	OPEN HOUSE	HARYANA	10,160	33	2,370	1.35	1.27	96.5	71.8	513

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IPR Knowledge Review, Patna Examines Bihar's Roadmap to a Stronger Poultry Economy



Bihar's ambition to build a stronger and more competitive poultry economy came under discussion at the IPR Knowledge Review in Patna on 3rd October 2026, where industry experts, poultry farmers, academicians and government representatives examined the opportunities and constraints shaping the state's poultry sector.

Held under the theme "Bihar Rising – The Next Poultry Powerhouse of Eastern India," the programme focused on a central question: what will it take for Bihar to move from a growing poultry market to a more organised, productive and value-driven poultry economy?

The discussions covered a wide range of issues—from farm productivity, poultry health and nutrition to water management, feed quality, egg quality, processing and value addition. The programme also brought attention to the role of farmers, Farmer Producer Organisations (FPOs) and cooperatives in creating a stronger production base and improving farmers' participation in the value chain.

The participation of Shri Shirsat Kapil Ashok, IAS, Secretary, Dairy, Fisheries and Animal Resources Department, Government

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of Bihar, as Chief Guest, reflected the growing importance of poultry and allied sectors within Bihar's broader animal agriculture. In his talk Shri Ashok highlighted the growing importance of Bihar's livestock sector and the need for a more coordinated, sector-specific approach to accelerate its development. He noted that dairy, fisheries, poultry and goat farming are closely interconnected and together contribute to rural incomes, employment and the wider economy. While dairy and fisheries are receiving increased attention through cooperative and cluster-based initiatives, poultry was identified as an area with significant untapped potential, given Bihar's large consumer market and strategic location as a gateway to eastern and northeastern India, as well as Nepal. He outlined plans to support poultry through public-private partnership models, including proposed chicken clusters at Gaya and other locations, integrated processing facilities and support for investors under the state's existing policies. Rather than competing with the established private sector, the government intends to facilitate investment, infrastructure and value addition, particularly in processing and marketing, Added Shri Ashok. He also spotlighted initiatives in fisheries, including infrastructure and production clusters, brood banks and concessional financing, while goat development is being pursued through cooperative structures, meat retailing and emerging opportunities in goat milk and value-added products. The overarching message was that Bihar's livestock economy should move beyond production to processing, value addition, organised marketing and stronger farmer institutions. Poultry, in particular, was projected as a major future growth engine for Bihar's livestock sector, with private investment and PPP-led development expected to play a central role.

Uday Singh Bayas, President IPEMA-Poultry India participated in the seminar as Guest of Honour. He provided an overview of Poultry India, the world's largest International Poultry Exhibition and invited Bihar's poultry sector stakeholders to join the 18th edition to be held in Hyderabad from 25th to 27th November 2026.

Delivering the Industry Leadership Oration, Amit Saraogi, Chairman & Managing Director, Nouriture – Anmol Feeds highlighted Bihar's growing potential as a poultry production hub and called for a more integrated approach to sectoral development. Drawing on his experience in the state's poultry business, he emphasised the importance of building a robust

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ecosystem that connects farmers, entrepreneurs, suppliers, veterinarians and other stakeholders. Mr. Saraogi stressed the need for a comprehensive industrial policy that specifically addresses poultry breeding, broiler and layer farming, feed production and processing. Such a framework, he suggested, would encourage investment, support smaller farmers and facilitate the development of organised poultry enterprises. He also highlighted the importance of strengthening farmer engagement, veterinary services and technology transfer. Reliable access to medicines, nutritional supplements, diagnostic facilities and professional advice could help farmers improve productivity and manage operational risks. Emphasising Bihar's potential to become a recognised poultry industry centre, Mr. Saraogi called for closer collaboration between the government, universities and private enterprises. He also pointed to the sector's capacity to generate employment for veterinary professionals and create opportunities for local entrepreneurs. He concluded by saying that developing an integrated poultry value chain, supported by appropriate policies and sustained investment, would help Bihar strengthen its poultry economy, reduce dependence on supplies from other states and generate wider economic opportunities.

In the Keynote Address, Prof. (Dr.) P.K. Shukla, President, Indian Poultry Science Association and Professor & Head, Department of Poultry Science, DUVASU, Mathura, brought a national perspective to the discussions. He said that Bihar's poultry sector has undergone a significant transformation over the past decade, moving from being regarded as a non-traditional poultry state to emerging as an important growth centre in Eastern India. The sector's growth has outpaced national averages, with poultry production increasing by nearly 95% between 2018–19 and 2024–25. Official figures indicate egg production of around 37,839 lakh eggs in 2024–25, while the state has set an ambitious target of approximately 62,000 lakh eggs by 2028. The expansion is being driven by both commercial poultry and backyard farming. While commercialisation is creating opportunities for scale, backyard poultry continues to contribute significantly to rural livelihoods, household incomes and nutritional security. Prof. (Dr.) Shukla added that Bihar's strong maize production base provides another strategic advantage. Greater integration between maize farmers, poultry producers, feed manufacturers and processors could strengthen the state's poultry value chain and reduce input vulnerabilities. He further said that the next phase of growth, however, will require a stronger ecosystem rather than reliance on subsidies alone. Access to quality chicks and feed, veterinary services, vaccination, disease surveillance, credit and insurance, along with improved marketing and processing infrastructure, were identified as critical requirements. Developing poultry and feed clusters, strengthening farmer organisations and SHGs, expanding veterinary and diagnostic networks, and promoting processing and value addition could further accelerate the sector's development. Prof. (Dr.) Shukla concluded by saying that the emerging opportunity lies in creating an integrated and inclusive poultry value chain linking farmers, producers, processors, institutions and markets. With coordinated investment, technology adoption and stronger institutional collaboration, Bihar has the potential to become a major poultry powerhouse of Eastern India, contributing to rural employment, nutritional security and broader economic development.

The seminar brought together the following distinguished speakers:

Dr. Rakesh Gupta General Manager (Technical) Venkateshwara Hatcheries Pvt. Ltd.	Issues, Opportunities and Future Dimensions for Poultry Industry in Bihar
Dr. Narahari Founder and CEO NH ProPOWER Consultancy Services	Advancing Bihar's Poultry Value Chain: Modern Farming , Egg Value Addition and Processing Opportunities
Dr. Ruturaj Patil Regional Technical Manager South Asia EW Nutrition	Water Management in Poultry: A Critical Nutrient for Health and Performance
Dr. Vijay R. Tijare General Manager Venky's (India) Ltd. - Foods Division	Unlocking Bihar's Poultry Processing and Value Addition Potential
Dr. Venkat M. Shelke Associate General Manager (Health), Technical Services Kemin Industries South Asia Pvt. Ltd.	Importance of Intestinal Health Management in Poultry
Prof. (Dr.) P. K. Singh Dean, Post Graduate Studies and Registrar Bihar Animal Sciences University	Poultry Feed Quality: The Key to Better Performance and Profitability
Dr. Pawan Kumar President Bihar Poultry Farmers Association	The Role of Farmers, FPOs and Cooperatives in Bihar's Poultry Revolution
Dr. Sumant Kumar Manager Technical Venky's (India) Ltd.	Nutritional Pathways for Stronger Egg Shell and Better Egg Quality

The range of subjects discussed at Patna underlined that Bihar's poultry opportunity cannot be addressed through production alone. Improvements in farm management and technical efficiency need to be accompanied by stronger feed and health systems, market access, processing infrastructure and greater farmer participation in the value chain. The IPR Knowledge Review thus provided a platform for stakeholders to examine Bihar's poultry opportunity from multiple perspectives—government policy, science, farm management, nutrition, health, processing and markets. The larger challenge now is to translate these opportunities into a coordinated development pathway that can strengthen the state's poultry sector and its contribution to Eastern India's animal agriculture economy.



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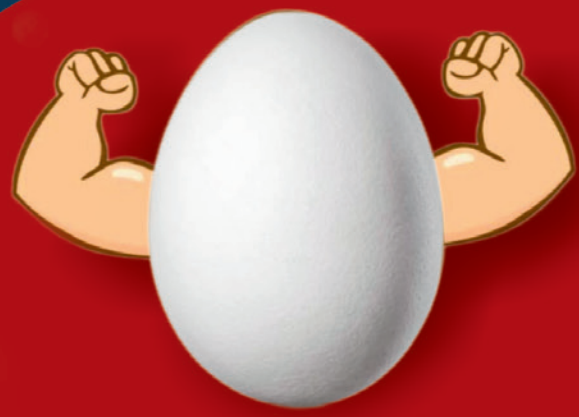
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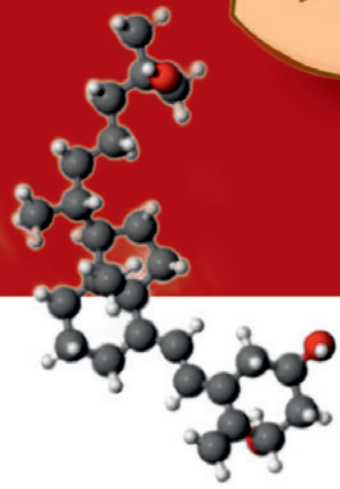
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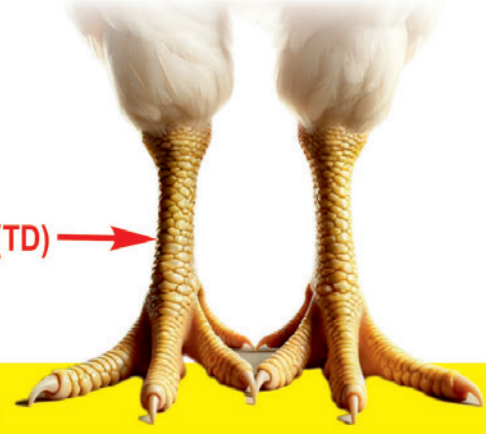


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CLFMA AGM and National Symposium Focus on Feed Security, Veterinary Capacity and Livestock Productivity





The Compound Livestock Feed Manufacturers Association (CLFMA) of India held its 59th Annual General Meeting and 67th National Symposium on 11th and 12th September in Mumbai, bringing together policymakers, industry representatives, researchers, farmers and other stakeholders to deliberate on the challenges and opportunities facing India's animal agriculture sector.

Held under the theme 'Animal Agriculture – The Backbone of Sustainable Development', the two-day programme focused on feed security, livestock productivity, veterinary capacity, farmer resilience, technology adoption and the need for stronger integration across the value chain.

In his Chairman's Address, Divya Kumar Gulati, Chairman, CLFMA of India, stressed the importance of strengthening the fundamentals of animal agriculture, particularly domestic feed production and greater collaboration among stakeholders. Thematic discussions were led by Tarun Shridhar, IAS (Retd.), former Secretary, Department of Animal Husbandry & Dairying, Government of India, who highlighted the contribution of livestock to livelihoods, nutrition and economic development.

The symposium also featured Naresh Pal Gangwar, Secretary, Animal Husbandry & Dairying, Government of India, and Dr. Muthukumarasamy B., Joint Secretary (NLM), Department of Animal Husbandry & Dairying, among the key government participants.

A significant part of the discussions centred on feed security, with concerns over competing demand for maize and soybean from other industries. The symposium noted that poultry feed requirements are currently around 30 million tonnes, with annual





demand estimated to be increasing by approximately 3–3.5 million tonnes. With maize accounting for about 55% of poultry feed, improving crop productivity, availability and supply-chain reliability was identified as an important requirement for sustained poultry growth.

The need to strengthen veterinary capacity was another recurring theme. Participants highlighted the growing requirement for trained veterinary professionals as livestock production becomes increasingly enterprise-oriented. Greater participation of the private sector in veterinary education was discussed as one potential avenue for addressing capacity constraints.

Discussions also pointed to the transition towards more organised and enterprise-led livestock production, with productivity, farmer capabilities, market linkages, animal health and resource efficiency emerging as interconnected priorities. Speakers emphasised that improvements in genetics, nutrition, healthcare and farmer skills would need to progress together rather than in isolation.

The second day featured keynote presentations, policy discussions and panel sessions covering feed and raw-material availability, technology and innovation, international trade, pet food and the contribution of animal agriculture to global food security. The potential application of Artificial Intelligence in productivity improvement, decision-making and operational efficiency also formed part of the deliberations.

A dedicated 'One Nation, One Voice' panel brought together representatives of national industry associations to discuss greater coordination in policy advocacy. The discussion underlined the importance of a more aligned industry approach and sustained engagement between government and industry in addressing emerging challenges.

The event also recognised contributions to the sector through the CLFMA Awards and Gold Medals. Jagbir Singh Dhull received the CLFMA Lifetime Achievement Award. Gold Medals were presented to Dr. Abhishek Venkat for the poultry sector, Dr. Mehnaaz Qayoom for the dairy sector and Shreya Awasthi for the aqua sector.

The CLFMA Souvenir 2026 and Survey Report 2026–2030 were also launched during the programme, providing sector information and analysis for stakeholders.

The two-day programme concluded with a valedictory session that reiterated the need for coordinated action across government, industry, research institutions and the farming community. Feed availability, animal health, productivity, technology adoption and farmer resilience emerged as key areas requiring continued attention as India's animal agriculture sector seeks to expand while responding to changing nutritional and market requirements.





KPS Marks 25th AGM with Growth in Turnover and Five-Year Expansion Plan



Kesla Poultry Sahakari Society Maryadit (KPS), a women-owned and tribal women-led poultry cooperative, held its 25th Annual General Meeting (AGM) and Silver Jubilee at the PRADAN Campus, Kesla on 28th September 2026.

The meeting was attended by 1,273 producer members, KPS staff, buyers, government officials, representatives of cooperatives and producer companies associated with the Madhya Pradesh Women Poultry Cooperative Federation (MPWPCL), and other stakeholders.

The Chief Guest of the programme was Arun Kumar Bhatt IAS (Retd.), who served as Zila Panchayat, Narmadapuram when KPS conducted its first AGM 25 years ago. Other dignitaries included Indrajeet Kaur, Regional Director, NCDC; Bashudev Singh Bhadauria, Deputy Registrar, Cooperative Department, Betul; Ashish Sharma, DPM, Narmadapuram; and Pramod Paghaare of NarmadapuramPatrakar Sangh.

Managers and members from cooperatives and producer companies in Tamia, Deori, Lateri, Alirajpur, Churhat, Semeriya, Maikal and Dindori also participated. The participating institutions are part of the MPWPCL network.

Presenting the audited annual report, KPS President, Kunti Dhurve reported that the cooperative's annual turnover increased from Rs. 36.06 crore to Rs. 43.05 crore, representing a growth of 19.38%. KPS recorded a profit of Rs.3.06 crore.

During the year, KPS sold 19.67 lakh birds, with a reported live weight of approximately 43 lakh kg. The cooperative attributed









the improvement in performance to production efficiency, market realisation and cost management, along with the efforts of its members, board, staff, field teams and buyers.

KPS was established in 2001 with around 200 women members. Over the past 25 years, its membership has increased to 1,273, alongside the growth of its poultry business.

The MPWPCL network currently comprises 17 producer cooperatives and producer companies across 16 districts of Madhya Pradesh, covering more than 9,000 tribal women producers. The federation and its professional team provide support in areas including production, business management, governance and institutional development.

The cooperative's next phase of development will focus on increasing production capacity and improving producer returns. KPS has planned the addition of 175 new poultry sheds over five years, with 35 sheds proposed each year.

The expansion programme will include higher chick placement, improvements in farm infrastructure and productivity, adoption of appropriate technologies and stronger market linkages.

The AGM also highlighted the income generated by individual members. Five members earned more than Rs.1 lakh from poultry production during the year and were recognised as "Lakhpati Didis". KPS has set a target of increasing this number to 20 during the coming year.

As KPS begins its next five-year phase, the cooperative's focus will be on expanding its producer base and farm capacity while improving productivity, market access and income generation for its members.

New Vaccine Technologies and Hatchery Practices in Focus at Lucknow Seminar






The growing importance of hatchery vaccination in strengthening early-life disease protection was the focus of a technical seminar organised by Ventri Biologicals Pvt. Ltd. in Lucknow on 18th September 2026. The seminar, themed "Hatchery Vaccines and Vaccination: Catching the Future," brought together technical professionals and industry representatives to discuss emerging approaches to poultry vaccination.

The programme began with a welcome address by Deepak Khosla, General Manager (Marketing), followed by a technical presentation by Dr. Prakash Reddy, Deputy General Manager.

Dr. Reddy highlighted the need for a better understanding of emerging pathogens, particularly their transmission routes, vulnerabilities and mechanisms of immune evasion. He noted that vertical transmission remains an important consideration in developing effective disease-control programmes.

The session covered newer vaccine technologies, including genotype-based, vector and immune-complex vaccines, and emphasised that vaccine selection needs to be aligned with the disease challenge, flock conditions and available scientific evidence. Regular assessment of vaccine protection, safety and changes in circulating pathogens was also underlined.

The discussion also examined developments in hatchery vaccination in India, including semi-automated subcutaneous and spray vaccination of day-old chicks. While these technologies can improve speed and uniformity of administration, their effectiveness depends on trained personnel, proper equipment calibration and routine quality checks to minimise vaccination errors and missed birds.

An expert panel comprising Deepak Khosla, Dr. K. P. Kale, S. D. Lakra, Dr. Prakash Reddy and Dr. Rakesh Gupta provided further perspectives on hatchery vaccination and poultry health management.

The programme concluded with a vote of thanks by Harjit Padda, Deputy General Manager, and Shashi Bhushan, Assistant General Manager.



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Aviagen India Holds Technical Workshop on Ventilation Management



Aviagen India organised a two-day technical workshop on "Ventilation Management in Closed Broiler Houses" on 6th and 7th October 2026 in Jaipur. The programme brought together poultry professionals for technical discussions on environmental control and management practices in modern closed-house broiler production.

The workshop opened with a welcome address by Dr. Ramakrishna, Business Manager, Aviagen India, who underlined the importance of technical knowledge and effective environmental management in addressing the changing requirements of broiler production.

The technical sessions were led by Andrew Bourne, Bernard Green, Mike Block and Dr. Sivakumar, who shared their expertise on ventilation management and closed-house operations. The programme covered ventilation principles, brooding management, environmental control, water quality and biosecurity, with discussions focusing on practical approaches to maintaining suitable house conditions and addressing on-farm challenges.

With rising temperatures and increasing adoption of controlled-environment housing, ventilation has become a critical component of broiler management. The sessions examined how ventilation systems can be effectively managed to maintain appropriate temperature, air quality and environmental conditions, while supporting bird health, welfare and performance across varying climatic conditions in India.

An interactive quiz formed part of the programme, allowing participants to test their understanding of key technical concepts and engage directly with the speakers. The format also encouraged discussion and exchange of field-level experiences among participants.

The workshop provided a platform for poultry professionals to discuss operational challenges and examine practical approaches to ventilation and environmental management. The emphasis throughout the programme was on translating technical principles into consistent and effective on-farm practices.

The programme concluded with discussions highlighting the importance of continuous technical learning, sound environmental management and disciplined husbandry practices in modern broiler production.

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Huvepharma Summit Focuses on Disease, Biosecurity and Technology







The fifth edition of the RESCOM Summit 2026, organised by Huvepharma SEA (Pune) Pvt. Ltd., brought together more than 250 veterinary practitioners and poultry health professionals from across India in Shillong from 3rd to 5th September 2026. Held under the theme "Poultry Health 360", the summit examined some of the key challenges shaping the future of poultry production—from evolving disease threats and biosecurity to precision nutrition, technology adoption and artificial intelligence.

The deliberations reflected a growing industry realisation that poultry health can no longer be viewed in isolation. Disease prevention, nutrition, farm management, technology, economics and value-chain efficiency are increasingly interconnected in determining productivity and profitability.

Opening the broader economic discussion, Dr. Tarun Shridhar, Director General, Indian Chamber of Food and Agriculture & Former Secretary, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India highlighted the potential of poultry to drive rural transformation. He pointed to the sector's short production cycles and relatively low entry barriers as important advantages for generating rural employment, improving smallholder incomes and creating opportunities for women and marginalised communities. He also stressed the need for greater integration across the poultry value chain, particularly in feed manufacturing, processing, cold-chain infrastructure and distribution. Such integration, he noted, could help reduce post-harvest losses while improving access to

Disease emergence and changing pathogen profiles received considerable attention. Dr. Nitin Kurkure, Director of Research, Maharashtra Animal & Fishery Sciences University examined the continuing challenges posed by Newcastle disease (ND) and avian influenza (AI), particularly in the context of evolving field strains and their implications for vaccination programmes. He emphasised the importance of stronger genomic surveillance, improved disease reporting, appropriate vaccine strategies and





rigorous biosecurity. Effective coordination between industry and government was also identified as critical to improving disease preparedness and response.

Dr. Devender Hooda, Director Sales & Technical, Huvepharma SEA turned the focus to the often-underestimated impact of mycoplasmosis, particularly Mycoplasma gallisepticum (MG) and Mycoplasma synoviae (MS). Drawing on data from Huvepharma's My-Screen PCR programme, he highlighted the increasing occurrence of complex infections and the importance of monitoring breeding flocks because of the role of vertical transmission. The discussion underlined the need to move from reactive treatment towards systematic surveillance and prevention, with breeder health forming a critical component of mycoplasma control.

With modern broilers selected for rapid growth and high production efficiency, Bruno Sand, Head of Technical Marketing, LANXESS Biosecurity Solutions stressed the importance of maintaining robust biosecurity throughout the production cycle.He distinguished between end-of-cycle or terminal biosecurity and continuous farm-level measures. Effective cleaning and disinfection, controlled visitor and vehicle movement, appropriate boot-dip practices and proper carcass management were highlighted as essential components of a comprehensive disease-prevention programme.

Prof. (Dr.) P. K. Shukla, President, Indian Poultry Science Association & Professor and Head, Department of Poultry Science, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura highlighted the growing role of feed enzymes in precision







nutrition. Phytases, proteases and xylanases can improve nutrient utilisation by breaking down anti-nutritional factors and enhancing the availability of nutrients from feed ingredients. Beyond improving feed efficiency, better utilisation of nitrogen and phosphorus can reduce nutrient excretion and contribute to lowering the environmental footprint of poultry production. The discussion reflected the increasing importance of balancing productivity, feed economics and sustainability.

The summit also looked beyond conventional poultry management. O. P. Singh, Managing Director, Huvepharma SEA examined the growing role of artificial intelligence and data-driven decision-making across the farm-to-fork value chain. Potential applications span hatchery management, flock-health monitoring, feed optimisation, predictive analytics and environmental control. However, he cautioned that AI adoption should not be viewed simply as an IT investment. Reliable data, trained personnel, ethical frameworks and leadership commitment will be essential if digital technologies are to deliver meaningful gains across the industry. His central message was that AI should augment—not replace—the experience and judgement of farmers, veterinarians and technical personnel.

The Shillong summit ultimately reinforced a broader message: the next phase of poultry growth will depend on the industry's ability to integrate health, nutrition, biosecurity, technology and data into a more connected production system. As the sector expands to meet India's growing demand for affordable animal protein, such integration will become increasingly important for productivity, resilience and sustainability.

Key Takeaways

- **Disease surveillance:** Greater genomic surveillance and early detection are needed to address evolving pathogens
- **Biosecurity:** Prevention remains the most effective and economical approach to disease control
- **Breeder health:** Monitoring breeding flocks is critical in managing vertically transmitted infections such as mycoplasmosis
- **Precision nutrition:** Feed enzymes can improve nutrient utilisation, feed efficiency and environmental performance
- **Digital transformation:** AI and data analytics are emerging as important tools across the poultry value chain
- **Integrated approach:** Future poultry health strategies will increasingly combine veterinary science, nutrition, management, technology and economics





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Vitamin D Metabolism Gains Attention as Poultry Genetics Push Production Limits



The nutritional implications of increasingly productive and longer-laying poultry genetics came under focus during a three-city technical seminar series organised by GLAMAC International at Hyderabad, Namakkal and Kathmandu in September.

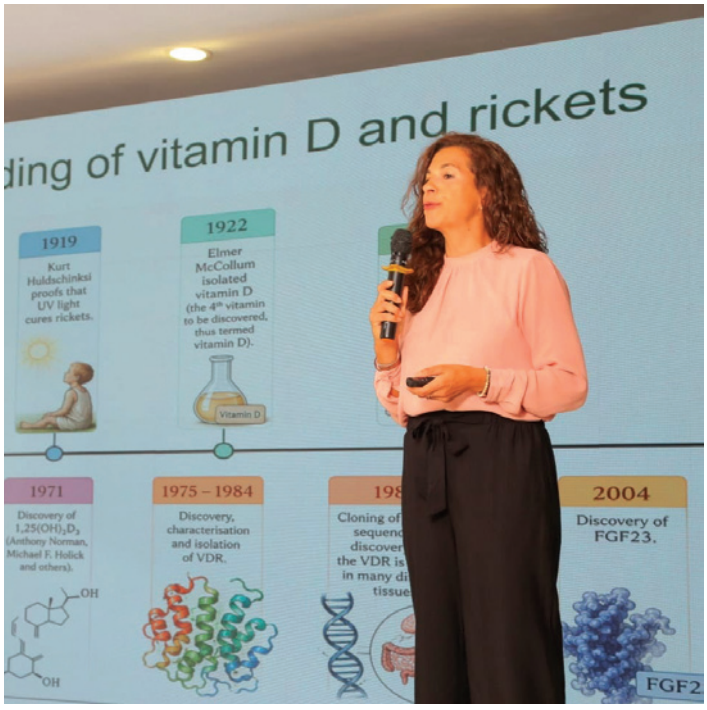
Held under the theme "Vitamin D3 Metabolism – Beat the Science with Panbonis," the programmes brought together poultry consultants, veterinarians, farmers, feed millers, nutritionists and other industry professionals to examine the role of Vitamin D metabolism in sustaining production, skeletal health and eggshell quality, particularly in modern layer flocks.

Addressing the seminars, Dr. Sumon Nag Chowdhury, Deputy General Manager – Technical & Sales, GLAMAC International, highlighted the nutritional challenges emerging from continued genetic improvement in layer birds. With commercial layers capable of maintaining production for extended cycles beyond 100 weeks, he noted that nutritional strategies must increasingly address the demands placed on calcium metabolism, skeletal integrity and eggshell formation over prolonged periods.

Dr. Nag Chowdhury also presented the science behind Panbonis, a Vitamin D3 metabolite-based nutritional solution developed by Herbonis, Switzerland, and discussed its potential application in modern poultry nutrition.

Katia Pedrosa, Global Product Manager, Innovad Group, presented research and field data on Panbonis, covering its mode of action and reported effects relating to calcium utilisation, eggshell quality, skeletal health and production performance. The presentation prompted discussions on the practical challenges









of maintaining flock performance during extended laying cycles.

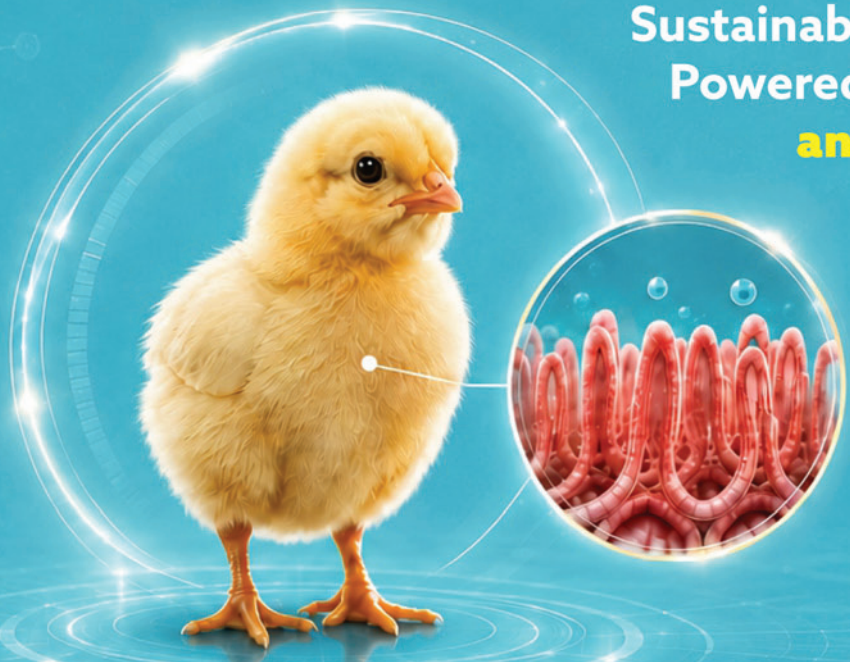
At the Kathmandu programme, Abir Mukherjee, Managing Director, GLAMAC International, stressed the need for poultry nutrition to evolve alongside advances in genetics and production systems. He highlighted science, innovation and knowledge sharing as important components of sustainable poultry production.

The interactive sessions saw participants raise questions on Vitamin D3 metabolism, calcium utilisation, eggshell quality, skeletal health and nutritional management of long-cycle layers. The discussions also provided an opportunity to relate research findings to field-level production challenges.

The three programmes underscored a broader industry trend: as poultry genetics continue to raise the ceiling on production and flock longevity, precision nutrition and a deeper understanding of nutrient metabolism are becoming increasingly important to sustaining performance and bird health.

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PFI's 37th AGM Focuses on Protein Security, Feed and Disease Preparedness



The 37th Annual General Meeting (AGM) of the Poultry Federation of India (PFI), held in Kochi, brought together more than 950 delegates from across the country. Farmers, breeders, integrators, feed manufacturers, veterinarians, scientists, equipment companies and other stakeholders participated in discussions on the key priorities shaping the Indian poultry sector.

Welcoming delegates, Ranpal Dhanda, President, PFI, said the AGM provided an important platform for the poultry value chain to exchange knowledge and collectively address emerging challenges. He emphasised the need to translate advances in technology and scientific research into practical benefits at farm level, particularly in disease management, nutrition, genetics, biosecurity and modern farming.

Mr. Dhanda identified protein security as an important future priority and said eggs and chicken would have a significant role in providing affordable nutrition to India's growing population. PFI, he announced, would take forward Mission Protein India to promote scientific information on the nutritional value of poultry products and counter misinformation. He also called for greater participation of young professionals, entrepreneurs, veterinarians and next-generation farmers in the Federation.

Ravinder Singh Sandhu, Secretary, PFI, presented the annual report, outlining the Federation's interventions during the year.

On poultry vaccination, PFI highlighted its engagement with the Government of India on LPAI and HPAI vaccine policies, stating that the efforts of PFI and other national poultry associations had contributed to enabling domestic manufacture and legal import of HPAI vaccines.

The Federation also pursued a simplified framework for Pollution Board NOCs for poultry farms in Haryana, seeking a separate approach rather than treating poultry under the general industrial category. Discussions were also held with the Haryana government and Mandi Board on market committee fees on maize and bajra.

On poultry waste management, PFI has sought government support for biogas plants for breeder and layer farms, including a proposed subsidy of up to Rs.1 crore. The Federation also raised concerns over rising soybean DOC prices, following which it undertook a market assessment and made representations to the concerned authorities.





"Management of Immunosuppression in Broilers," while Dr. Vijay Anand, India Centre Lead, Soy Excellence Center, spoke on "Soy as a Continuing Foundation for the Feed Industry." Certificates were presented to the four toppers of the Soy Excellence Center course.

A panel discussion on "Indigenous Viral Strains for Poultry Vaccines: Strengthening Disease Control Through India-Specific Solutions", moderated by Dr. Nitin Vasantrao Kurkure, brought together Dr. Premanshu Dandapat, Dr. N. K. Mahajan, Dr. Shirish Nigam, Dr. Sanjay Gavkare and Dr.Gowthaman.

The second day centred on the strategic challenges facing poultry over the coming decade.

Ranpal Dhanda described feed security as an essential component of India's protein security, stressing the need to



PFI continued its efforts on maize production and quality, conducting awareness programmes for farmers in view of the growing requirement from the poultry feed industry.

The Federation has also acquired a 400-square-yard commercial plot in Panipat for a laboratory. The project report has been prepared and work is expected to commence shortly. The proposed facility will provide diagnostic and technical support to farmers and the wider poultry sector.

Further, the AGM reviewed the Federation's role in VIV Select India 2026, particularly in facilitating participation by farmers and smaller producers. PFI announced that the exhibition would now be organised annually, with the next edition scheduled for 21st to 23rd April 2027, at Yashobhoomi Convention Centre, New Delhi.

Rahul Khatri, Treasurer, presented the financial report for the year.

The technical programme covered poultry health, nutrition, feed and vaccination. Uday Singh Bayas, President, IPEMA and Poultry India, invited delegates to the Poultry India Exhibition scheduled for 25th to 27th November 2026.

Among the technical presentations, Dr. Rakesh Gupta, General Manager–Technical, Venkateshwara Hatcheries, addressed improve the availability, productivity and affordability of key feed ingredients, particularly maize. He called for wider access to high-yielding hybrid seed varieties to help bridge the gap between achievable and current average maize productivity.

Disease preparedness was identified as another priority. Mr. Dhanda proposed a National Poultry Disease Surveillance Grid linking farms, veterinarians, district and state laboratories and national reference laboratories through a digital network. The objective would be to move from reactive disease control towards an integrated early-warning system.

He also advocated stronger collaboration between ICAR institutions, veterinary universities, government, vaccine manufacturers and the poultry industry to develop vaccines based on indigenous viral strains and India's priority diseases.

A major highlight was the launch of Mission Protein India and its mascot by Shri Mahipal Dhanda, Minister of Education, Government of Haryana, in the presence of other dignitaries.

The initiative includes a dedicated Instagram platform to disseminate scientific information on protein and nutrition and promote greater public awareness of the importance of adequate











protein consumption.

Mr. Vijay Sardana, Advocate, Supreme Court of India and Techno-Legal Advisor, PFI, delivered the keynote address and proposed a National Poultry Export Mission 2035, involving PFI, DAHD, APEDA, the Ministry of Food Processing Industries, the Ministry of Commerce and state governments.

He argued that India should progressively move from bulk poultry shipments towards specification-based, value-added exports, with parameters such as cuts, weight, packaging, certification, microbiological standards, halal compliance and traceability becoming integral to export products.

Dr. Sunil Neelam, ICAR–Indian Institute of Maize Research, presented "Strategy to Meet Maize Requirement for Poultry in Changing Scenarios."Ashok Thakur, Director, NAFED, highlighted poultry's contribution to employment and rural economic activity and stressed the importance of protein security, feed security and farmer welfare.

Chief Guest Shri Mahipal Dhanda emphasised stronger government-industry collaboration and recognised the poultry sector's contribution to nutrition, employment and economic development.

The AGM also featured presentations by Anil Singh Tomar and Arvindra Singh, followed by a panel discussion on "Beyond Maize and Soy: Alternative Feed Ingredients for Efficient and Cost-Effective Poultry Production."

Moderated by Dr. Tarun Shridhar, the panel comprising Prof. (Dr.) P. K. Shukla, Dr. Ashok Kumar Pattanaik, Dr. Amit Das, Dr. Shiv Kumar Bhardwaj, Dr. Nataraja Hulegondi and Dr. Ajay Deshpande examined opportunities for diversifying the feed basket while maintaining nutritional quality and cost efficiency.

Industry leaders Divya Gulati, Vasant Kumar, Madan Mohan Maity and Bahadur Ali shared perspectives on feed costs, farmer sustainability, innovation, competitiveness and the future growth of Indian poultry.

The AGM concluded with the felicitation of special guests, industry associations and sponsors across various categories. Rahul Khatri, Treasurer, PFI, delivered the concluding vote of thanks.

The two-day AGM underlined a set of priorities for the industry's next phase of growth: protein security, feed availability, disease surveillance, indigenous vaccine development, farmer sustainability, technology adoption and export-oriented value addition.













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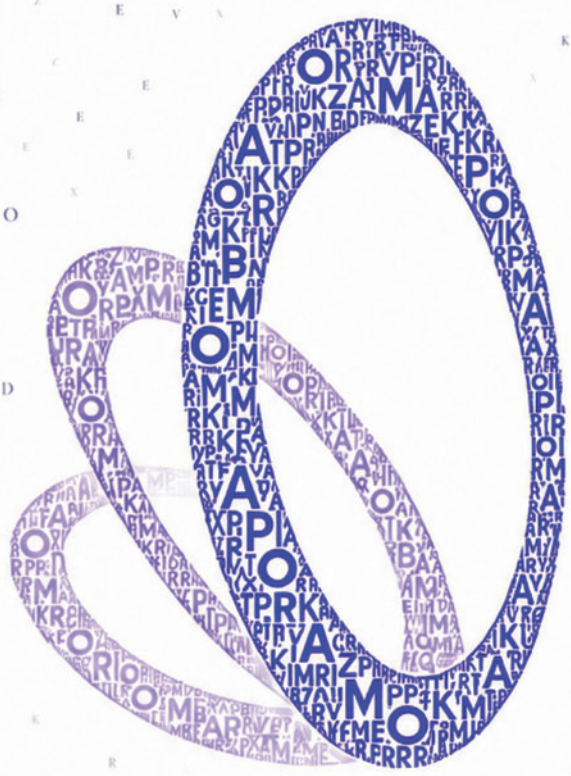
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