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# INDIAN POULTRY REVIEW

THE MAGAZINE OF INDIAN POULTRY INDUSTRY | DECEMBER 2024

COVER

## PROGRESS IN POULTRY PROCESSING

ARTICLE

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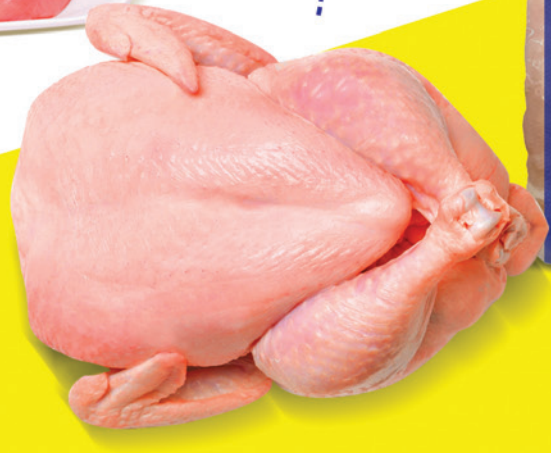


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# The Edit

## POSITIVE TRENDS FOR INDIA'S POULTRY SECTOR IN 2025

As we step into 2025, the Indian poultry sector is poised to soar to new heights, riding on a wave of optimism and innovation. The past year has seen the industry tackle challenges with resilience, and the groundwork laid in 2024 is set to yield promising results. From technological advancements to shifting consumer preferences, the trends shaping the sector indicate a brighter future ahead.

One of the most significant drivers of growth is the increasing adoption of technology across the poultry value chain. From precision farming techniques to blockchain-enabled traceability, the sector is embracing tools that enhance efficiency and transparency. These innovations are not only helping producers optimise their operations but also addressing consumer concerns about food safety and quality. With the government's push for digital transformation in agriculture, 2025 could witness a wider implementation of these technologies.

Consumer demand is another beacon of hope. Rising incomes, urbanisation, and a growing awareness of the nutritional benefits of poultry products have led to a steady increase in consumption. Eggs and chicken are becoming staples in Indian households, transcending traditional barriers of cuisine and culture. The surge in demand for ready-to-eat and processed poultry products further underscores this shift, opening up new avenues for growth.

Sustainability is also taking centre stage. With increasing global scrutiny on environmental practices, the Indian poultry industry is adopting sustainable farming methods and exploring alternative feed options. These efforts not only align with global standards but also cater to the eco-conscious consumer, adding a competitive edge to Indian exports.

As the world ushers in 2025, India's poultry sector stands as a testament to the power of innovation and resilience. With the right mix of technology, consumer-centric strategies, and sustainable practices, the industry is well on its way to becoming a global leader. Here's to a year of progress, prosperity, and poultry!

**G. N. Ghosh**
**Managing Editor**

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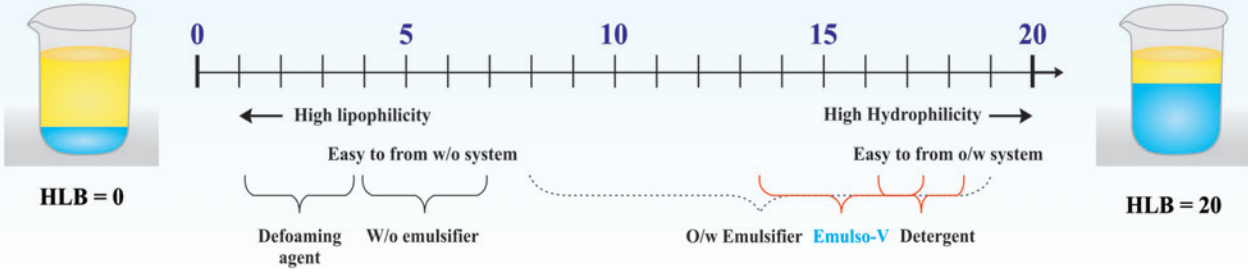


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|---|---|---|
| Cum Feed/Egg | : | 117 |
| Weeks Above 90% | : | 38 |
| Peak Weekly Production | : | 95% |
| Feed Cost/Egg @Rs.26/KG | : | Rs.3.04 |

### *Maa Dhanop Poultry Farm,*
***Bhilwara Dist, Rajasthan*** (Mr. Prakash Mundra)

**Achieved 336 HHE in 82 weeks (95% Achievement of STD) with 117 g avg feed intake/day**

| | | |
|---|---|---|
| Cum Feed/Egg | : | 139 |
| Weeks Above 90% | : | 35 |
| Peak Weekly Production | : | 94% |
| Feed Cost/Egg @Rs.26/KG | : | Rs.3.61 |

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Article

# Feed Safety: Leading the Way to Food Safety

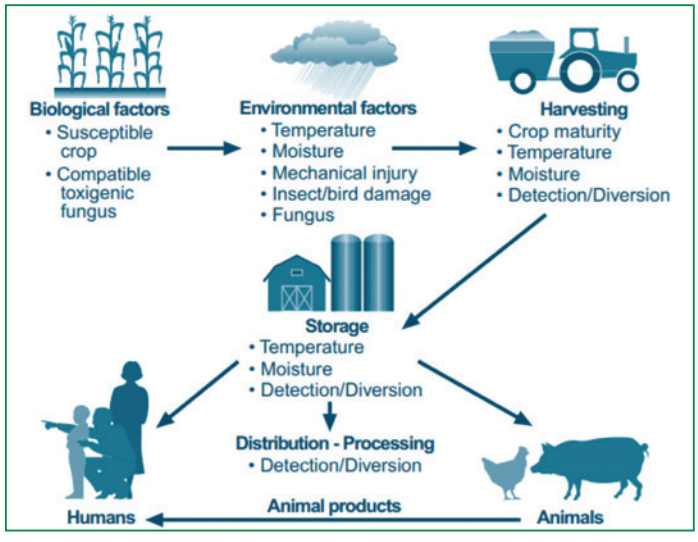
**Dr. Senjuti Kar**
Program Manager (Feed Safety)
Trouw Nutrition South Asia

Feed safety is a prerequisite to food safety and human health as well as a necessity for animal health and welfare. Since feed accounts for majority of livestock production cost it is important that the feed produced is safe for the animals that consume it as well as the animal produce, like eggs, meat and milk is safe for human consumption. Animal feed plays a leading role in the global food industry, and it is the largest, most important component for sustainable production of safe and affordable animal produce. In order to maintain this, good quality raw materials monitored through strict quality control measures should be used for feed production. Together with this, there are various other sources of feed contamination like microbial hazards, mycotoxins, pesticides, environmental pollutants, etc.

From raw materials to final feed the four important aspects should be taken care to ensure complete feed safety.

1. Mycotoxin risk management
2. Feed mill hygiene
3. Moisture management
4. Microbial risk management

## 1. Mycotoxin Risk Management




Mycotoxins are the secondary metabolites produced from toxigenic fungi recognised as major food and feed contaminants. They are a source of grave concern in food contamination, resulting in mycotoxicosis in humans and animals. Toxin production is influenced by moisture, time, temperature, and food or feed substrates. Contamination can occur throughout the food chain—from the field, during harvesting, processing, materials, preharvest contamination of mycotoxins is the most difficult part in risk management. Regarding food safety issues, food and feeds absolutely free from fungi and mycotoxins are needed everywhere to prevent health hazards and to secure the international food trade. Foods associated with fungal alterations are characterised by a low value of water activity (aW) or a low pH value, where fungi may be imposed on the colonisation of bacteria and yeasts. Therefore, the main food groups contaminated by fungus are cereals and their derivatives, nuts and fruits. On the other hand, the major mycotoxin-producing fungal genera are Aspergillus, Penicillium, Fusarium and Alternaria. Nonetheless, although thousands of mycotoxins exist, the most important for public health are aflatoxins, ochratoxin, fumonisins, zearalenone, and trichothecenes.

The key to mycotoxin control is risk management taking an integrated approach rather than isolated measures. It is important that the mycotoxins present in feed are identified quickly and accurately followed by using superior quality toxin binders. A rapid mycotoxin monitoring tool will allow producers to take quick decisions with respect to the handling of mycotoxin contaminated raw materials and/or finished feed. To help identify the risk of mycotoxins in feed on the farm, Trouw Nutrition offers Mycomaster, a lateral-flow smart device that provides a reliable quantitative reading of the contamination levels in feed materials and compound feed. It enables rapid on-site, cost-effective and user-friendly analysis of six different mycotoxins: Zearalenone, Deoxynivalenol, Aflatoxins, Fumonisins, Ochratoxin and T2-HT2. This easy-to-use tool gives results within 15-30 minutes, which means that feed producers can analyse mycotoxins themselves. It can also be connected to Trouw Nutrition's global data exchange system, allowing the review of data collected from all over the globe. Good quality Mycotoxin Binders need to be added to feed according to the risk which are specific to mycotoxin binding with little or no nutrient binding enhanced with gut health management and immunity building capacity as both gut health and immunity is compromised with multi mycotoxin challenge.

## 2. Feed Mill Hygiene

As food safety and consumer awareness increases, feed hygiene has become an integral part of poultry and livestock operations – ensuring that the feed given to the animals is clean and safe. Raw materials and feed can be contaminated by pathogens that can lead to risks on health of animals and economic losses. Aside from that, the contamination in feed and ingredients is a potential risk of food safety for consumers. Since mycotoxins are produced by mould it is important that the raw materials and feed are stored properly at feed mill and farm. Feed mill machinery can act as strong carriers of microbial organisms and need to be effectively handled to avoid the same. Flushing of feed mill as part of maintenance program, needs to be carried out, with organic acid-based concepts, so that the production machinery is devoid of pathogenic microbes. Samples need to be collected from critical control points before and after flushing, for factual judgement of the decreased risk of (re)contamination.

## 3. Moisture Management

Variations in raw materials coupled with climatic conditions can be very challenging for feed manufacturers to maintain the moisture content of animal feed. Moisture management is very important for feed producers because along with high temperature, high amount of moisture in the feed may result in growth of mould and subsequent production of mycotoxins. That is why maintaining correct and constant moisture levels in animal feed is critical in obtaining high quality feed. Also, when moisture content in animal is too less it can result in reduction in yield, increased fines, reduction in pellet durability. High temperatures along with high humidity pose optimum conditions for microbes to proliferate and reduce the quality of nutrients in animal feed. To maintain the shelf life of feed despite moisture addition, addition of mould inhibitors is of vital importance. Propionic acid has been used as a mould inhibitor and shelf-life extensor since the last 40 years. However, since it is very corrosive a blend of organic acids works better and has a broader spectrum. Trouw Nutrition's Fylax Forte HC liquid is a liquid mould inhibitor with a synergistic blend of organic acids and surfactants.

## 4. Microbial Risk Management

There have been several studies for microbial contamination of feed and food. Animal feed production is a complex process involving several steps during feed milling. In feed manufacturing, there are numerous opportunities to introduce microorganisms from various environmental and other sources. While most of these microorganisms are likely non-pathogenic, pathogens can also be members of feed microbial populations. In addition to fungi, several bacterial pathogens have been identified. They are believed to be associated with animal feed and include Listeria, Clostridia, pathogenic Escherichia coli, and Salmonella, as well as others that are less well characterised. These bacteria can contaminate animal carcasses at slaughter or cross-contaminate other food items, leading to human illness. Although tracing contamination to its ultimate source is difficult, several large outbreaks have been traced back to contaminated animal feed. Improvements in the safety of animal feed should include strengthening the surveillance of animal feed for bacterial contamination and integration of such surveillance with human foodborne disease surveillance systems. In managing contamination, raw materials should be strictly monitored in terms of microbial contamination like Salmonella, Enterobacteria, E. coli and moulds. Water activity (aW) is an essential parameter to be measured that influences microbial development, along with other parameters like temperature, humidity, exposure to light, air. aW is a measure of the amount of free water available in raw material or feed, that predisposes the material to microbial growth. The mould and bacterial growth can be addressed through strict quality control measures for procurement of quality raw materials, apt storage of raw materials and finished feed, and judicious inclusion of mould inhibitors and feed acidifiers. The feed acidifiers intended to be used should possess specific activity against moulds or bacteria, depending upon the pathogen to be taken care of.

## Conclusion

Foods of animal origin have an important role in a balanced diet and must be safe for human consumption. Equally important is the need for the food to be perceived as safe by the consumer. Safe food of animal origin must be free from animal pathogens that infect man and from contamination by residues. Animal feed has been identified as a critical component of food chain considering the carryover of undesirable substances such as dioxins, mycotoxins, heavy metals, pesticides, pathogens, veterinary drugs, growth promoters, specified risk material (prions), microplastics etc. from feed to food of animal origin. If carryover is not properly managed, contaminated feed can directly harm species that are sensitive to the unintended components they consume and can result in residues in foods of animal origin such as meat, milk and eggs that render them unsafe for human consumption. Hence, animal feed should be strictly monitored to rule out the presence of undesirable components. Failure to monitor the risks can lead to monetary losses to raw material producers, quality raw material supply chain, consequently deteriorating the animal health and performance; and the end product (meat, milk & eggs). Trouw Nutrition's complete risk management programme enables to make decisions based on knowledge and data, and to use our products in the most effective way.

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Article

# Probiotics as an Alternative for Antibiotics in Broiler Nutrition

**Veerle Hautekiet & Stefaan Bekaet**
Huvepharma
Belgium

In order to guarantee the sustainable long-term availability of therapeutics, the use of antibiotics is restricted in animal feed, leading feed manufacturers to search for alternatives to enhance their product quality.

Probiotics are defined as live 'microorganisms that, when administered in adequate amounts, confer a health benefit to the host'. The use of probiotics to improve gastrointestinal health and to prevent various infections has been investigated for many years.

Although their mode of action is not always completely understood, it has been demonstrated that the use of probiotics has several health benefits such as:

- Balancing the microbial gut flora via competitive exclusion
- Preventing infections with pathogens via secretion of antimicrobial substances, enhancement of the intestinal barrier and immunomodulation
- Protecting protein and lipids from oxidative destruction.

Clearly, these properties make probiotics a willing alternative for antibiotics.

Currently, various strains of probiotics are available for use as feed additives. When selecting a probiotic, one has to take into account the fact that strains of the same probiotic species, and, therefore, their activity, can be different due to genetic variations. These characteristics make choosing the right probiotic for each specific situation quite challenging.

## Spore Forming Bacteria

Dysbacteriosis is characterised by intestinal inflammation and shortening of the small intestinal villi, resulting in clinical signs and/or a reduction of production parameters. Currently, the list of micro-organisms used in the prevention of dysbacteriosis is varied and long. However, not all are as effective as initially anticipated.

The key characteristics of probiotics used for this purpose in particular, and in the feed industry in general, include:

- Heat-resistant during the feed pelleting process
- Stable during the digestive process.

This was not the case for the first generation of probiotics such as certain lactobacilli.

However, second generation probiotics, such as Bacillus licheniformis are incorporated in the feed as spores which makes them an interesting candidate for dysbacteriosis prevention.

## Unique Feed Additive

B-Act is a probiotic feed additive containing viable spores of a unique strain of Bacillus licheniformis producing bacteriocins: peptides with inhibitory effects on specific bacteria.

B-Act has a proven suppressing effect on dysbacteriosis in broilers by stabilising the gut flora, reducing gut damage and thus increasing the length of the small intestinal villi.

In a trial carried out in 50 birds, supplementation of $1.6*10^{12}$cfu Bacillus licheniformis/mton of feed from start to finish, resulted in a lower dysbacteriosis score compared to the control group not receiving B-Act (Table 1).

**Table 1. Dysbacteriosis score in commercial broilers on day 24 and 31**

| | Control | B-Act |
|---|---|---|
| Day 24 | 1.24 | 0.57 |
| Day 31 | 1.13 | 0.48 |

Furthermore, B-Act inhibits the growth of Clostridum perfringens, the direct causal agent of necrotic enteritis.

This was demonstrated in a trial carried out in 400 coccidiosis vaccinated birds, which were challenged with $10^{8}$cfu/bird of Clostridum perfringens at day 18,19, 20 & 21.

Results indicated a significantly lower necrotic score in B-Act supplemented birds (dosage $1.6*10^{12}$cfu Bacillus licheniformis/mton of feed) compared to the control group.

**Table 2. Average weight (kg), feed conversion ratio, mortality (%) and average necrotic enteritis lesion score in the control and B-Act group on day 22 ($^{a,b}$ values with different superscripts within a row differ significantly, $p<0.05$).**

| | Control | B-Act |
|---|---|---|
| Average weight (kg) | $0.71^{a}$ | $1.01^{b}$ |
| Feed conversion ratio | $1.529^{a}$ | $1.413^{b}$ |
| Mortality (%) | $14.00^{a}$ | $4.00^{b}$ |
| Average necrotic enteritis lesion score | $0.45^{a}$ | $0.22^{b}$ |

Additionally, in this trial, mortality was significantly reduced in the probiotic group. Being able to influence necrotic enteritis in a positive way, supplementation of B-Act also resulted in an improved average weight and feed conversion ratio (Table 2). Besides the positive effects on dysbacteriosis and necrotic enteritis, B-Act has also been proven to reduce the percentage of lameness in bacterial chondronecrosis with osteomyelitis (BCO-Fig. 1).

In a trial, conducted in 308 broilers, feed supplementation with B-Act at $1.6*^{10}$cfu Bacillus licheniformis/mton of feed from start to finish, resulted in a relative decrease of 66% lame birds (Fig. 1).

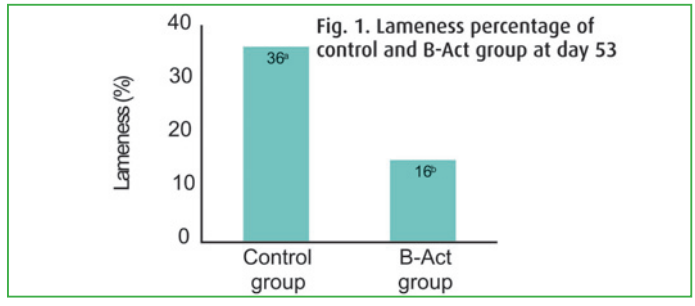



Fig. 1. Lameness percentage of control and B-Act group at day 53

## Avian Health & Performance Platform

Evaluating all of this scientific data in daily operations is not always quick and simple. To help overcome this problem, Huvepharma has created the Avian Performance Platform, or Aviapp. The Aviapp platform allows the comparison of 47 health parameters with performance data and the benchmarking of data with other users on the platform in a specific region, country or at a global level.

By using Aviapp, we evaluated the aforementioned scientific findings with data from the field. An anonymous dataset from Aviapp, containing 4042 individual birds' data from across the UK, was selected and the association between dysbacteriosis (gut health) and femoral head necrosis (lameness) was investigated.

The results confirm the trial results and show a positive correlation between a femoral head necrosis score and the dysbacteriosis score. However, no dose-response effect of increasing dysbacteriosis severity is observed (Table 3). Globally, Aviapp demonstrates the positive effect of B-Act use on gut health via the dysbacteriosis follow up.

Globally, Aviapp demonstrates the positive effect of B-Act use on gut health via the dysbacteriosis follow up.

**Table 3. Contingency table with odds ratio and 95% confidence intervals, showing association between dysbacteriosis class and femoral head necrosis class**

| Dysbacteriosis class | 0 | 1 | | |
|---|---|---|---|---|
| 0 | 2253 (99.6%) | 9 (0.4 %) | 1.00 | Na |
| 1 | 599 (91.5%) | 56 (8.5%) | 23.40 (11.51-47.58) | <0.001 |
| 2 | 975 (91.3%) | 93 (8.7%) | 23.88 (12.00-47.53) | <0.001 |
| 3 | 54 (94.7%) | 3 (5.3%) | 13.91 (3.66-52.81) | <0.001 |
| Total birds | 3881 | 161 | | |

*Data for femoral head necrosis is regrouped: Class 0, no femoral head necrosis and class 1, birds with positive femoral head necrosis scores were created. Dysbacteriosis scores were grouped into 4 classes, with severity increasing from no dysbacteriosis to the most severe: Class 0: scores of 0; Class 1: scores of 1 and 2; Class 2: scores of 3, 4 and 5; Class 3: scores of 6 and 7; Class 4: scores of 8, 9 and 10. No birds were found to have a score of 8, 9 or 10 therefore class 4 contained no entries.*

## Conclusion

In summary, there is strong evidence in literature and also from commercial trials, that probiotics such as B-Act boost performance and help control pathogenic bacteria, and so various diseases, in animal nutrition. These findings are also confirmed when analysing large datasets from the Aviapp platform, which is a very effective tool to follow up on health parameters.

# PROGRESS IN POULTRY PROCESSING

In addition to the traditional marketing channels, it's time to explore how the poultry industry will meet consumer expectations by adapting new and existing technologies to raise and process broilers utilising fewer resources and with improved welfare, food safety and ease of preparation. IPR delves into future consumers as far as 2035 and the issues that will impact their protein choices; let's check are we ready?

By 2035, Generation Z will be the primary purcasers of protein and this will have a significant impact on the way that chicken is raised, processed and marketed. Chicken producers, processors and marketers need to start planning how to future-proof communications, as well as the broiler supply chain, with the unique consumer expections and needs of Generation Z. "Our future consumer is really forging a new food future. What I mean by that is that they're doing things differently from their parents in terms of food," said Michele Murray, Executive Vice President, Food Agriculture and Ingredient Practice, Ketchum.

For example, 68% of Generation Z say they are cooking differently than their parents, with only 20% indicating that the way they ate as kids impacts the way they eat now. "We're seeing a major shift in how this particular target audience, Generation Z is choosing their food, making purchasing decisions and their general attitude about food," she added.

One of the biggest differentiators between Generation Z, born between 1997 and 2012, and previous generations is that there is a large part of this demographic that considers themselves food evangelists. This is likely due to their lifelong exposure to social media and the internet. "When we first identified this as a consumer segment back more than 10 years ago, 22% of the overall population fit into that evangelist category," Murray explained. "But for Generation Z, we found that half describe themselves as food evangelists." In other words, this demographic is highly interested in understanding more about food and sharing that food story with the people around them.

Generation Z is also highly value-driven when it comes to the food they purchase in terms of the environment. They also believe their food choices say something about them – for sustainability to body issues and even when it comes to certain political issues. "Compared to Generation Z and Boomers, most of Generation Z says they feel really judged about eating patterns," said Murray. "They feel the weight of the world to make certain decisions about food and I think we're seeing that pressure come through in different ways." While some members of Generation Z aren't yet purchasing food with their own money, it's still important to pay attention to what they want. "We have this canary in the coal mine in terms of the signals that we're seeing. It's important for marketing and brands to start evolving what we're doing so that we can keep check with what those values are," she added.

In India, the poultry industry is on a robust growth curve in 2024. Poultry industry will grow at 8-10% in 2023-24, rating agency ICRA projected earlier this year, driven by volumes and realisations following stable demand and higher penetration of processed chicken as well as value-added products. It said volume expansions and increasing market share by larger, organised players will drive this growth. In addition to stable demand, the revenues will be supported by increased penetration of processed chicken and value-added products, which are growing consistently, the ICRA report added. Higher demand for chicken means companies will see their average realisations per kilo rising.

According to the 'Basic Animal Husbandry Statictics – 2024' prepared by the Department of Animal Husbandry and Dairying, released on 26th November, 2024 by the Union Minister Rajiv Ranjan Singh, the country is estimated to produce 142.77 billion numbers of total eggs during 2023-24, which is a compound annual growth of 6.8% over the past 10 years. In 2014-15, the egg production was 78.48 billion numbers. "Further, the production has increased annually by 3.18% during 2022-23 (138.38 billion numbers)," the ministry said. Andhra Pradesh is the largest producer of eggs with a share of 17.85% of the total egg production in the country followed by Tamil Nadu (15.64%), Telengana (12.88%), West Bengal (11.37%) and Karnataka (6.63%).

The total meat production in the country (including poultry, cattle, buffalo, sheep, goat and pig) is estimated as 10.25 million tonnes during 2023-24. It registered a compound annual growth of 4.85%, over the past 10 years. In 2014-15, the meat production was 6.69 million tonnes. "Further, the production was increased by 4.95% in 2023-24 over 2022-23 (9.77 million tonnes). In 2023-24, of the total meat production, 48.96% was from poultry, cattle contributed 2.60%, buffalo meat was 18.09%, sheep and goat were 11.13% and 15.50% respectively and the share of pig meat was 3.72%.

West Bengal is the largest meat producer with 12.62% share, followed by Uttar Pradesh (12.29%), Maharashtra (11.28%), Telangana (10.85%) and Andhra Pradesh (10.41%). The highest annual growth rate in meat production was recorded in Assam (17.93%) followed by Uttarakhand (15.63%) and Chhattisgarh (11.70%).

The growing consumer trends in India are also heavily leaning towards how to order healthier take-out food by Generation Z. If they have run out of time or have no time to cook, many Indian families are now choosing to enjoy ordering take-out frequently post the pandemic years. While, this generation has the good intentions of eating healthy home-cooked meals, but given the hectic pace of lives, it is slowly becoming convenient to order take-out. We are living in an age when several startups have come up in India with the vision to provide us with better choices. Choices are turning towards buying safe proteins. While dairy products like paneer can be contaminated and beans can be poorly soaked and cooked, making them hard for your digestion and gut health, staying with fresher animal proteins may help. Ensuring buying poultry from reputable sources is primary. Chicken is considered as one of the most popular and affordable foods in India currently. It is a great source of protein, and significantly less expensive when compared to other types of meat, such as beef, seafood etc.

Growing urban populations and shifting dietary preferences, including a trend towards more processed and ready-to-eat poultry products, have driven the rising demand for chicken as a protein source. Government initiatives, subsidies and improved infrastructure for transportation and cold storage have bolstered investment and growth in the poultry sector, enhancing supply chain management. The contract farming model offers guaranteed payments and performance-based incentives, boosting farmers' profit margins and encouraging larger operations. Additionally, the potential for exporting poultry products to international markets presents a dynamic opportunity for the Indian poultry sector. However, this is also influenced by global market conditions, trade policies and competition from other exporting countries.

BAADER is a German family-owned global partner for food processing solutions, boasting over a century of experience. Achieveing the most efficient use of the animal protein being processed is of growing industry interest and consumer demand. In the business of meat and poultry processing, capturing as much high-granted meat and minimising rejects is a way to make the most of the meat being processed. It offers as much economic as sustaintable benefits.

The key to the century-long success of the company lies in their unwavering commitment to innovate and optimise the entire food processing value chain. Through close collaborations, the group is dedicated to crafting dependable and effcient processing solutions tailored to meet local demands. The group emphasises the importance of data analytics and that it is indispensable in safeguarding animal welfare, hygiene, quality and overall utilisation rates.

Given the dynamic nature of the food processing industry and evolving consumer preferences, BAADER adapt their offerings accordingly. As lifestyles shift towards convenience, they assist their customers in producing ready-to-cook meals and tailored cuts suitable for the thriving fast-food sector, all tailored to meet local eating habits. Additionally, they facilitate close monitoring of the trend towards increased automation, from simple processing tasks to intricate operations like deboning.

By fostering a culture of knowledge and data sharing, the group can collectively achieve long-term optimisation of the food value chain. Hence, BAADER recently acquired a majority stake in the software development firm Emydex Technology, known for delivering real-time, precise reporting on production processes. This acquisition empowers customers to enhance efficiencies, increase yields, lower costs and boost profitability. By integrating Emydex's capabilities with BAADER's digital and equipment advancements, the company can now provide comprehensive solutions to the poultry processing industry, offering software to streamline production management, report on flock levels, and analyse processing operations.

With a focus on harnessing the significant benefits of data analysis and reporting for the group's global customers, BAADER has prioritised the development of precise and rapid data capture equipment. A prime example is the recently launched ClassifEYE vision camera, which utilises Artificial Intelligence to identify quality issues along the processing line. The key to the technology's accuracy lies in a self-learning process, wherein the system analyses images and develops an understanding of the relevant classifications specific to the location on the processing line.

Automation is the key to addressing several challenges in food supply and processing. The increasing demand for healthy proteins and the convenience required by busy lifestyles necessitate higher processing speeds, further processing, and reduced manual labour. BAADER, with its long-standing tradition of innovating efficient filleting technologies for both the fish and poultry industries, exemplifies this with its latest innovation: the automatic Breast Cap Deboner 660A. This advanced machine automates labour intensive filleting processes while meeting stringent quality and yield performance standards.

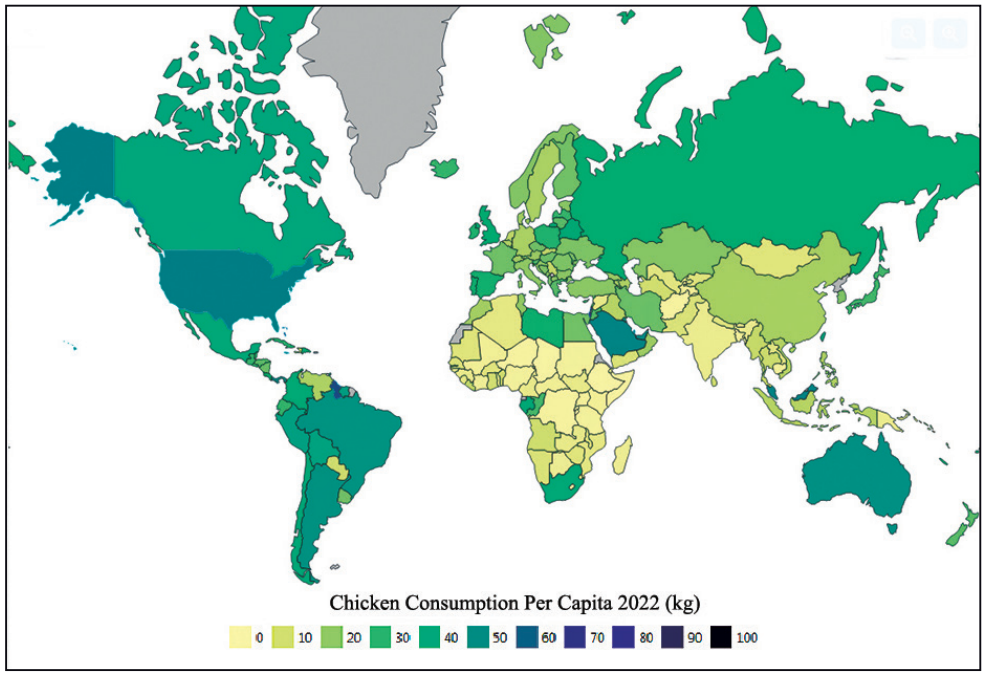
With the poultry processing industry being the fastest growing agricultural sub-sector, and especially in developing countries, the trends move towards food safety and nutrition. The pandemic actually helped to accelerate this trend in the industry. "For us as a manufacturer of food and processing machinery, the constant challenge of keeping up with the newest aspects of food safety regulation is a full-time job. Customers see the importance of guaranteeing to their end-users that the food they eat is perfectly safe," says Antoine De Bie, Account Manager, STEEN, Belgium. STEEN tries to make the life of the processor as easy as possible in terms of product quality and sanitation.

STEEN is a family-owned company, and their machines are being designed, developed, tested and manufactured in Belgium with over 60 years experience. "We are most excited about the development of new markets, especially the innovation on secondary processing lines. With new markets, comes new challenges. We want to see how the importance of further processing is going to be after the developement of these countries.", he adds.

The most exciting innovation in processing in the post pandemic era is the IoT. This is the future. Internet of Things is not only getting bigger in other industries, but some of the processing manufacturers are aiming to have such systems implemented in their equipment. Implementing IoT in the production line is one of the most interesting things to have. Certainly, looking at the trends (hygiene, food safety and nutrition), IoT allows one to measure every detail while the machines continuously communicate with each other. Need service on these machines? No worries, order the parts along with service engineers without a human doing anything about it, way cool in innovation.

Independent studies have found the presence and need of zero-waste processing not so high on the agenda for many machine manufacturers. But at STEEN, they are taking small steps that help reduce their footprint on the assembling side as well as the production itself, their goal is to go zero-waste. "In our factory in Belgium, we have implemented solar panels to reduce both cost as well as reducing $CO_2$. Plus, we are planting different fruit plants around the building to provide an extra snack for passing birds and give shelter to a variety of insects. It even looks cozy," says Antoine.

The pandemic did have an impact on the processing business. But with it were also opportunities that came as advantage. For example, STEEN employed digitisation of their processes both for sales and marketing as well as production. These were the biggest challenges at the moment. Their sales department invested in a brand-new demo-room that was built like a real production hall in compliance with all hygiene regulations. This allows the company to give the customer a feeling like a live presence in their production hall, mimicking their production facility to run tests and cover all aspects of the machinery while actually not even leaving the home-office.

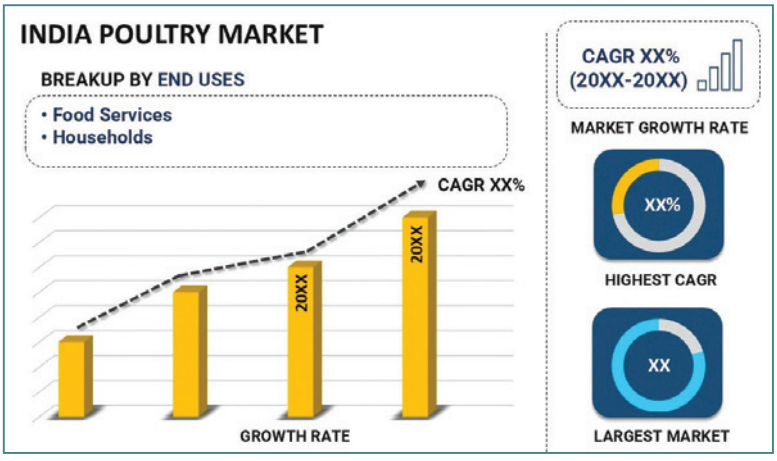



India's demand for processed poultry is increasing due to several factors influencing growth. The country's population is growing rapidly which leads to greater need for affordable protein. A growing economy means increase in average incomes and the urban population has led to more spending on protein and their dietary habits are shifting towards healthy preferences, so people are increasingly choosing chicken and eggs over red meat as an alternative lifestyle choice. In turn this leads to tremendous increase in poultry demand and steady increase in consumption over the years. This results in a high demand in food service sector, leading to a growth of poultry products. In 2024, the consumption of poultry meat in India was found to be over four million metric tons.

Furthermore government initiatives, such as the National Livestock Mission and support for poultry farming through subsidies and loans, have played a crucial role in boosting the sector. In addition , advancements in technology and improved breeding practices have enhanced productivity and efficiency in the poultry industry. Other factors, including a large consumer base, escalating demand for protein-rich foods, and rising government support, are also propelling the growth of the market in India.

The adoption of technology and automation is a significant trend in the Indian poultry industry, revolutionising advanced farm management systems that leverage technology to streamline operations. These include automated feeding, climate control and data monitoring tools. Technology is being employed to monitor and detect diseases in poultry farms. Systems equipped with sensors and cameras can continuously monitor bird behaviour, feed intake, water consumption and other vital signs to identify any abnormal patterns or signs, allowing prompt intervention and preventing the spread of diseases. Moreover, egg collection and processing have become more automated, reducing labour requirements and improving efficiency. Apart from this, the increasing popularity of precision farming techniques is further supporting market growth.

IMARC has generated a report which provides analysis of the key trends in each segment of the Indian poultry market along with forecasts at the country and state level from 2024-2032. The report has categorised the market based on the end use and distribution channel.




This includes food services and households. According to the report, food services represented the largest segment. The food service sector comprises establishments such as restaurants, cafes, hotels and quick-service outlets. As more people migrate to urban areas and adopt fast-paced lifestyles, there is an increased reliance on food services to cater to the convenience and time contraints of urban dwellers, providing them with ready-to-eat meals and dining options. Poultry products, particularly chicken, are popular due to their affordability, versatility and quick cooking time, making them a staple ingredient in food services. Furthermore, the organised food service sector in India has witnessed substantial growth in recent years. Along with this, the increasing consumer preference for eating out due to changing social dynamics, inflating disposable incomes and a growing desire for experiential dining are contributing to the expansion of this segment. Poultry-based dishes, including chicken curries, tandoori chicken, biryanis and sandwiches, feature prominently in the menus of Indian and international food service outlets, catering to the preferences of the dining-out culture. Also, the proliferation of online food delivery platforms, rising urbanisation and changing lifestyles and food perferences of individuals are fueling segment growth.

Distribution channels – traditional retail stores, business to business (B2B) and modern retail stores – account for the majority breakup of the market share. According to the IMARC report, traditional retail stores accounted for the largest market share. Traditional retail stores, such as local grocery stores, supermarkets and wet markets, have a wide precence across India. They are easily accessible to consumers in both urban and rural areas, making them a conveninent option for purchasing poultry products. In India, traditional retail stores align with the cultural preferences and shopping habits of consumers. Many consumers prefer to physically inspect and choose fresh poultry products before making a purchase. Traditional stores offer the opportunity for customers to personally select the desired cuts, sizes and quantities of poultry products, allowing a sense of control and satisfaction in their shopping experience. They often source poultry products locally or regionally, which aligns with the preferences for fresh and locally produced goods, supporting the local economy and fostering a sense of community. These stores are well-versed in the local culinary traditions and preferences, including the preferred cuts of poultry and traditional cooking methods. They stock a range of poultry cuts that are popular and familiar to local consumers, which makes traditional stores a preferred choice for consumers seeking specific cuts of poultry varieties for their regional dishes, thereby propelling the segment growth.

The IMARC report also gives a comprehensive analysis of all the major regional markets, which includes Maharashtra, Haryana, West Bengal, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Telegana, Kerala, Karnataka, Punjab, Orissa, Bihar, Madhya Pradesh, Gujarat, Rajasthan and others. According to them, Maharashtra was the largest market for poultry in India.

Maharashtra is known for its vibrant food service industry, with a diverse range of restaurants, hotels, cafes and street food vendors. The state offers a wide variety of cuisines, including local Maharashtrian, North Indian, South Indian, Chinese and international flavours. Poultry, especially chicken, is a staple ingredient in many of these cuisines, making it a key component of the menus in Maharashtra's food service establishments.

Another contributing aspect is the strong economic growth in Maharashtra and increased disposable incomes of individuals, facilitating higher spending on food, including poultry products. Maharashtra is one of the most urbanised states in India, with a high population density. Urban areas, such as Mumbai, Pune, Nagpur and Nashik, have a substantial consumer base with diverse culinary preferences and a higher demand for poultry products. The concentration of urban centres and a large population contribute to the robust demand for poultry products in the state, driving market growth.

The market in India is experiencing steady growth due to the adoption of various strategies and initiatives by key players to maintain their market position, meet evolving consumer demands and capitalise on emerging opportunities. Several established players are expanding their production capacities and diversifying their product portfolios to cater to wider range of consumer preferences. They are also introducing new product variants, such as value-added and processed poultry products to capture a larger market share and address changing consumer needs. Many large-scale poultry companies are adopting vertical integration strategies to streamline operations, improve traceability and enhance overall business performance. Key players are heavily investing in technology and automation to enhance efficiency, productivity and animal welfare. The market is also witnessing a rise in the adoption of sustainability and responsible practices, emphasising on efficient waste management, investments in marketing and brand building activities, and increased collaborations and partnerships with retailers, food service providers and e-commerce platforms to drive healthy comepetition within the domain.

**Opportunites in Poultry & Meat Sector at a Glance**

| Technology & Equipment Suppliers | Poultry Industry Players |
|---|---|
| • New technology in meat & poultry processing<br>• Modern abattoirs<br>• Cold chain<br>• New veterinary technology/services<br>• Food testing labs | • New products-value added products like frozen/chilled poducts, RTC/RTE, Indian ethnic products/snacks<br>• Egg powder plants<br>• New feed formulations and manufacturing<br>• Hatcheries |

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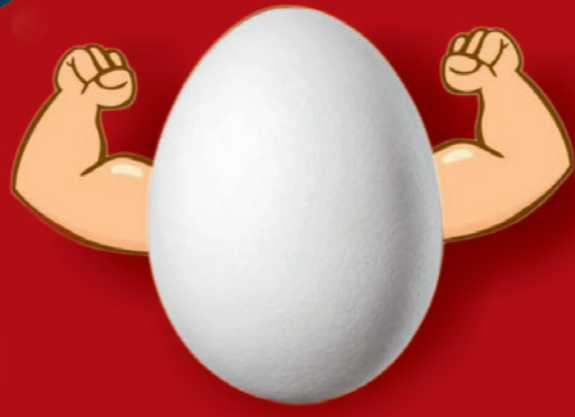


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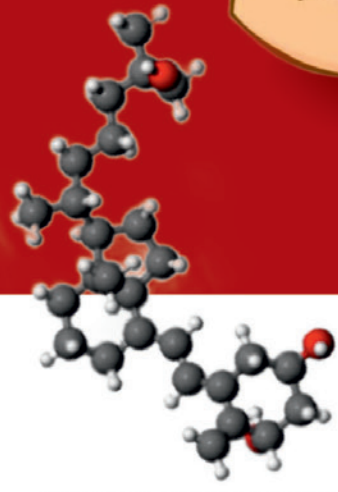

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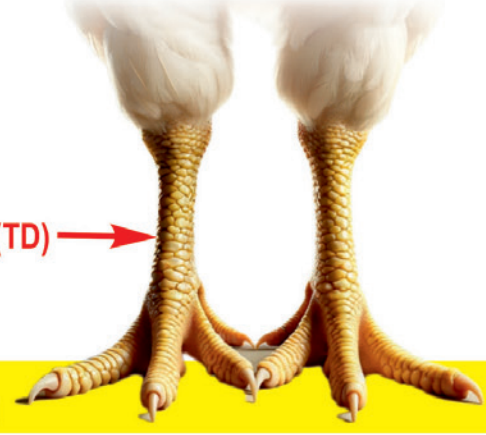

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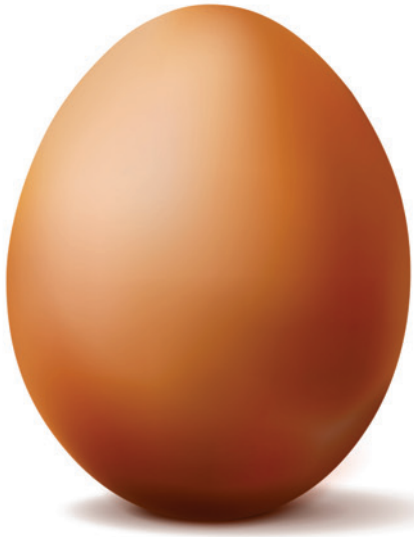

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Article

# Prepare A-Grade Poultry Products: The Importance of Evisceration

**Kate Jørgensen**
Head of Marketing, Poultry
BAADER

In poultry processing, evisceration is a critical step following stunning, slaughtering, bleeding, scalding, and defeathering. This process involves opening the bird's cavity to remove the viscera pack efficiently. Evisceration serves two main purposes: producing an A-grade bird ready for consumption and harvesting giblets for further processing.

*BAADER offers evisceration equipment for all capacities* *Picture Courtesy: BAADER*

## Ensuring Food Safety and Hygiene

Proper evisceration is vital for maintaining food safety and hygiene. Correctly removing intestines and organs reduces the risk of contamination from harmful bacteria like Salmonella and Campylobacter, which reside in the bird's gut. This minimises the potential for pathogens to spread to the meat, protecting consumers from foodborne illnesses. Additionally, evisceration allows inspectors to examine poultry carcasses and viscera packs for signs of disease, defects, or contamination, ensuring only healthy and high-quality birds proceed to market.

## Enhancing Product Quality and Consistency

Automatic evisceration systems have revolutionised modern poultry processing by boosting efficiency and productivity. While manual processing requires a large workforce, automated evisceration lines reduce labour needs and increase line speeds and product throughput. These systems ensure consistent product quality, meeting modern food safety standards, crucial in global markets.

## Full Utilisation of Each Bird

Evisceration also facilitates the separation and management of by-products and waste materials. Internal organs and other parts removed during the process can be used for various purposes, including human consumption, pet food production, rendering, or pharmaceutical applications. This comprehensive utilisation maximises the value derived from each bird.

Organs such as the liver, heart, and gizzard are often harvested for human consumption and can be found in many

*The automation of giblet harvesting reduces labour dependence and ensures consistent production quality* *Picture Courtesy: BAADER*

culinary traditions. Chicken intestines are rich in protein and contain various natural enzymes. They can be processed into a hydrolysate through autolysis and used as a feed attractant. Feathers can be processed into animal feed or used in the manufacture of insulation. Additionally, certain waste materials can be rendered into fats and proteins for industrial uses or even converted into biofuels, contributing to a more sustainable operation. This multi-faceted approach not only enhances profitability but also supports sustainability initiatives by reducing waste and promoting resource efficiency.

## Adapting to Market Demands

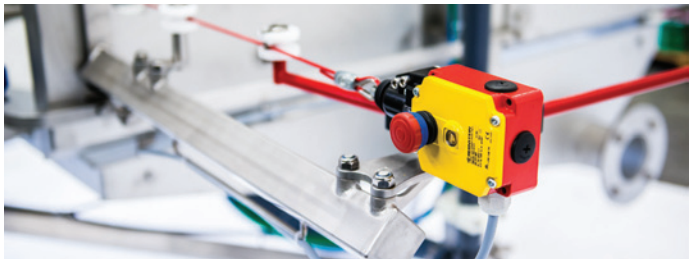
Poultry production must be flexible to meet varying market demands. Evisceration equipment should be highly adjustable to process different flock sizes and tolerate size variations within a flock. This adaptability ensures that processors can efficiently handle diverse production requirements.


*BAADER evisceration machines can easily be adjusted to fit the flock size* *Picture Courtesy: BAADER*

## Machine Safety and Maintenance

Automation and high line speeds place significant demands on machine safety. Machines equipped with advanced safety

features help meet stringent global safety standards. Additionally, evisceration machines must be easy to operate, adjust, maintain, and clean. Design considerations should include easy wash-down capabilities, minimised lubrication points, easy-release units, and service-friendly bearing constructions. These features optimise machine uptime and facilitate maintenance and cleaning.



*BAADER machines live up to the most demanding safety requirements*
*Picture Courtesy: BAADER*

## Correct Vent Removal

Automatic vent cutters must effectively remove the vent from the chicken through a circular cut around the vent opening. During cutting, the birds should be firmly positioned to ensure accurate cutting. An improperly adjusted venting machine can damage the intestines, causing fecal contamination of the carcass during evisceration. Vent cutters must be equipped with adjustment features to ensure correct product positioning regardless of size.

## Precise Opening

After vent cutting, the opener cuts the abdominal skin from the vent opening to the tip of the breastbone, creating the opening for the subsequent evisceration machine. Correct product positioning is essential to avoid damaging the intestines or opening the skin too much, which could leave the breast meat uncovered.

*BAADER opening machines are engineered for precision, regardless of flock size* *Picture Courtesy: BAADER*

## Efficient Removal of the Viscera Pack

After venting and opening, the automatic eviscerator must effectively remove the intestines and viscera pack without damaging the organs or intestines. The pack can be placed on the bird's back for easy inspection and manual organ harvesting, or it can be completely separated from the bird and conveyed for automatic or manual harvesting. This separation is hygienic and facilitates comfortable inspection.

*Separating bird and pack is hygienic and makes inspection comfortable*
*Picture Courtesy: BAADER*

## Removing the Crop

After evisceration, the Cropper automatically removes the crop and windpipe attached to the bird's neck by introducing a cropping probe into the bird's cavity. Correct machine adjustment ensures proper bird and probe positioning, ensuring effective removal of crops and windpipes while avoiding damage to the neck skin and breast. The probes must be available in different sizes to best fit the bird sizes being processed.

## Final Inspection and Neck Breaking

Final inspection and neck breaking can be performed in different machines or in a combo machine. The efficient removal of possible lungs and other residues from the cavity is performed using vacuum. The neck bone is removed from the carcass while leaving the neck skin attached to the bird.

## Inside-Outside Washing

To ensure the product is clean before reaching the consumer, the bird is washed thoroughly to reduce debris and bacteria load. Water nozzles enter the bird to clean it inside, while water jets wash the bird from top to bottom on the outside.

*A thorough cleaning reduces the debris inside and outside of the carcass* *Picture Courtesy: BAADER*

## The Future of Evisceration

After years of focusing on automating the complete evisceration and giblet harvesting process, the emphasis has now shifted to optimising these automated processes. Digitalisation and automatic data capturing are crucial in this new phase. By continuously monitoring evisceration performance, processors can make real-time adjustments to correct any deficiencies, thereby reducing costly downgrades and waste production.

One of the latest advancements in poultry processing is AI-based vision technology, which oversees each step of the evisceration process. This technology allows processors to identify and address critical issues such as missed vents, incorrect opening cuts, or missing viscera packs. As vision technology continues to evolve, it is expected to play an increasingly vital role in poultry production, enabling processors to enhance efficiency and boost business profits.

Evisceration is a crucial component of poultry processing, essential for producing A-grade products ready for consumption and harvesting valuable giblets and by-products. Automated evisceration systems enhance productivity, ensure food safety and hygiene, and contribute to the profitability of processing plants. With flexible and safe equipment, poultry processors can adapt to market demands and maintain high standards of quality and efficiency.

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Article

# The Advantages of Plant Derived 1, 25 $(OH)_2D_3$ Glycoside Over Other Metabolites of Vitamin D

Team Avitech

## Introduction

Vitamin D is a fat-soluble vitamin critical for maintaining calcium and phosphorus balance, promoting proper bone development and eggshell integrity, supporting muscle function and modulating the immune system of animals and birds. Vitamin D is absorbed from the digestive tract and requires the presence of bile salts for absorption (Braun, 1986). Cholecalciferol (Vitamin $D_3$), occurring in animals and Ergocalciferol (Vitamin $D_2$), occurring in plants are the two main natural sources of Vitamin D.

Compared to cholecalciferol (Vitamin $D_3$), its metabolites 25(OH)$D_3$, 1-α-(OH)$D_3$ and 1, 25$(OH)_2D_3$ are more effective because all the cholecalciferol entering the system is not converted into active metabolites. Active metabolites may directly reach the target tissue by bypassing hydroxylation in liver and kidney or both, hence have more efficacy than Vitamin $D_3$ (Goodgame et al., 2011).

Supplementing Vitamin D metabolites in addition to cholecalciferol ensures that animals receive the active or near-active forms of Vitamin D, enhancing their ability to regulate calcium and phosphorus metabolism efficiently. This is particularly important in fast-growing species like poultry and livestock, which have high nutrient demands.

$1,25(OH)_2D_3$ is the biologically active form of Vitamin D. It is beneficial as it bypasses the need for metabolic conversion, making it a preferred choice for supplementation. Plants in the Solanaceae family contain $1,25(OH)_2D_3$ as an active compound, and in these plants, $1,25(OH)_2D_3$ is found in glycosidic form.

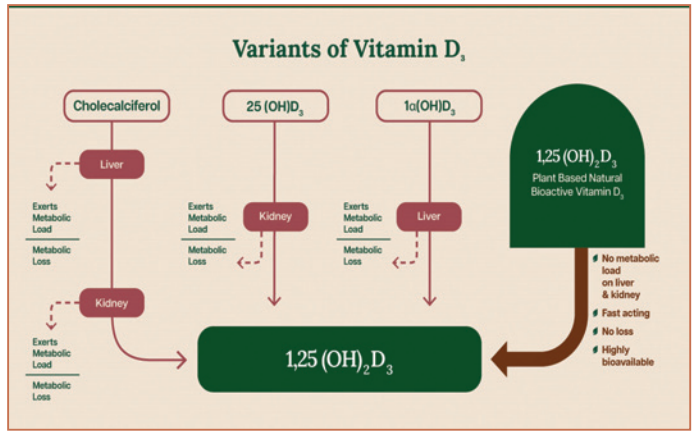
## Glycoside Form of $1,25(OH)_2D_3$

1,25-dihydroxy Vitamin $D_3$ Glycosides ($1,25(OH)_2D_3$-gly) are the active compounds in plants responsible for their Vitamin D-like activity. In addition to these $1,25(OH)_2D_3$-gly, plants also contain free $1,25(OH)_2D_3$, along with 25-hydroxycholecalciferol, 7-dehydrocholesterol and cholecalciferol (EFSA, 2015, Jäpelt, & Jakobsen 2013). The glycosylation pattern of $1,25(OH)_2D_3$ includes a distribution of 1 to 12 hexose units per aglycone, with mono-, di-, and tri-glycosides being identified (Bachmann et al., 2013). This glycosylation forms a protective structure that serves as a natural slow-release source of $1,25(OH)_2D_3$ and creates the high storage and processing stability of the active molecule (Klis, 2024).

## Benefits of $1,25(OH)_2D_3$-gly Over Other Metabolites of Vitamin D

1,25-dihydroxyvitamin $D_3$($1,25(OH)_2D_3$-gly) is the biologically active form of Vitamin D, and it offers several advantages over other Vitamin D metabolites like 25-hydroxyvitamin $D_3$ ($25(OH)D_3$) and 1-alpha-hydroxyvitamin $D_3$($1α(OH)D_3$) due to its direct physiological roles and bypass of metabolic conversion. Here is a detailed comparison:

### 1. Bypasses Metabolic Activation in Liver and Kidneys




- Studies (Christakos et al., 2016; Soares et al., 1976; Stevens & Blair, 1987) have shown that animals or birds with chronic kidney disease, liver dysfunction, or advanced age, the hydroxylation of $25(OH)D_3$ into $1,25(OH)_2D_3$ is impaired. This hydroxylation is crucial for intestinal calcium absorption, and its disruption negatively affects calcium and phosphorus homeostasis, bone quality, eggshell formation and immunity against infection
- The ability of glycosidic $1,25(OH)_2D_3$ to bypass these steps ensures sufficient active Vitamin D levels for physiological functions

### 2. Metabolism

- Gly-$1,25(OH)_2D_3$ exhibits delayed absorption and elimination due to the slow and sustained de-glycosylation, resulting in an extended half-life (T½) of approximately 30 hours (EFSA, 2015)
- In contrast, 1α-hydroxyvitamin $D_3$ ($1α(OH)D_3$) is metabolized in the liver to form $1,25(OH)_2D_3$, which has a significantly shorter half-life, ranging from 6 to 8 hours (Garcia et al, 2013)
- Sustained activity of Gly-$1,25(OH)_2D_3$ enhances calcium metabolism, leading to improved calcium absorption and strengthening immune function

### 3. Shelf life and Stability

- Available data show that the content of Gly-1,25$(OH)_2D_3$ remains stable even after extended storage periods of 12, 36, and 66 months and different conditions (4–8°C, at 20–26°C or at 37°C), with no significant reduction in its potency (EFSA, 2015)
- This long-term stability offers a major commercial advantage compared to other synthetic forms such as 25$(OH)D_3$ and 1α$(OH)D_3$

| Particulars | Metabolites of Vitamin D | | |
|---|---|---|---|
| | Plant Origin 1, 25$(OH)_2$ $D_3$ | 25$(OH)$ $D_3$ | 1α$(OH)D_3$ |
| Principal Molecule | Gly- 1,25$(OH)_2D_3$ | 25$(OH)$ $D_3$ | 1α$(OH)D_3$ |
| Origin | Natural | Synthetic/ Fermented | Synthetic |
| Shelf Life | 24 Months | 06-24 Months | 18 Months |

### 4. Safety Profile and Reduced Risk of Toxicity

- 1,25$(OH)_2D_3$-gly exhibit water solubility, which influences their absorption and metabolism in the body. Unlike fat-soluble vitamins, which can be stored in fatty tissues. This mechanism helps to prevent the accumulation of potentially toxic levels of Vitamin D in the body, thereby reducing the risk of hypervitaminosis D and associated complications such as hypercalcemia
- Thus, 1,25$(OH)_2D_3$-gly offers a safer profile compared to its fat-soluble counterparts, ensuring that adequate levels can be maintained without the risk of overaccumulation
- Free 1,25$(OH)_2D_3$ is rapidly degraded once its physiological role is fulfilled, ensuring tight regulation and minimising the risk of prolonged activity, which might otherwise result in adverse effects such as calcium dysregulation

### 5. Improved Immune Function

- Gly-1,25$(OH)_2D_3$ has a direct immunomodulatory role as it enhances the innate immune responses by inducing antimicrobial peptides, such as cathelicidins and defensins, which are critical for fighting infections
- 1,25$(OH)_2D_3$ modulates the activity of T cells and dendritic cells, promoting a balanced immune response and preventing excessive inflammation (Nunes et al., 2020)
- Carlberg and Haq (2020) reviewed the effects of 1,25$(OH)_2D_3$ on immune system modulation, highlighting its role in reducing the risk of autoimmune disorders and enhancing pathogen defense

### 6. Effect on Calcium and Phosphorus Homeostasis

- 1,25$(OH)_2D_3$ is the dominant hormonal player in regulating calcium metabolism. In conjunction with parathyroid hormone, and calcitonin it enhances the absorption of calcium and phosphorus in the intestines, which is essential for maintaining proper bone density and mineralisation, eggshell formation, regulating muscle contraction, and nerve transmission
- It directly influences calcium homeostasis by binding to the Vitamin D receptor (VDR) in intestinal epithelial cells, upregulating the expression of calcium transport proteins, such as calbindin (Lihua et al., 2022)
- Adequate levels of 1,25$(OH)_2D_3$ are vital for maintaining bone density and preventing fractures (Schwartz & Lizaola, 2014). Edwards and Hardy, 1989 indicated that supplementation of 1,25$(OH)_2D_3$ significant decrease in the occurrence of tibial dyschondroplasia (TD) and an increase in overall bone ash compared to 25-$(OH)D_3$. 1,25$(OH)_2D_3$ directly increases the synthesis of calcium-binding proteins in the intestines, facilitating more efficient mineral uptake to prevent such conditions (Dusso et al., 2005)
- Chennaiah et al. (2004) found that supplementation with 1,25$(OH)_2D_3$ resulted in significantly higher specific gravity in the eggs and improved egg production (McCoy, 2009) compared to those receiving only 25$(OH)D_3$ or 1α$(OH)D_3$

### 7. Phytase and 1,25$(OH)_2D_3$

- Recent studies have elucidated the synergistic relationship between phytase and 1,25$(OH)_2D_3$ in enhancing phosphorus and calcium utilisation in poultry
- For instance, a study by Geng et al. (2021) found that the combination of phytase and 1,25$(OH)_2D_3$ significantly improved phosphorus retention and bone mineralisation in broiler chickens, reducing the need for supplemental inorganic phosphorus in diets
- Jiang et al. (2022) demonstrated that supplementing diets with phytase and 1,25$(OH)_2D_3$ led to significant improvements in growth performance, and reductions in phosphorus excretion in broilers. Their findings indicate that this synergistic approach not only enhances nutrient utilisation but also supports skeletal integrity and overall health in poultry
- The study highlighted that this combination maximises the bioavailability of phosphorus from plant-based feed ingredients, which often contain phytate-bound phosphorus that is not readily absorbable

### Conclusion

- In conclusion, glycosylated 1,25-dihydroxyvitamin $D_3$ (1,25$(OH)_2D_3$-gly) offers significant advantages over traditional Vitamin D metabolites, such as 25-hydroxyvitamin $D_3$ (25$(OH)D_3$) and 1-alpha-hydroxyvitamin $D_3$ (1α$(OH)D_3$)
- Its unique property of bypassing metabolic activation in the liver and kidneys along with slow and sustained release facilitates better bioavailability, making it beneficial for animals. This direct availability enhances intestinal calcium and phosphorus absorption, critical for maintaining bone health, eggshell strength and overall mineral homeostasis
- The extended half-life and stability of 1,25$(OH)_2D_3$-gly contribute to sustained physiological effects, optimising its role in calcium metabolism and immune function while minimising the risk of toxicity associated with excess Vitamin D
- The synergistic interaction between 1,25$(OH)_2D_3$-gly and phytase further improves the bioavailability of phosphorus from feed, promoting enhanced growth performance, bone mineralization, eggshell strength, and overall health in poultry

Article

# Data Driven Decision Making

## Decoding Basic Animal Husbandry Statistics

**SHRIDHAR speaks**

**Tarun Shridhar**
Director General,
Indian Chamber of
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and former Secretary,
Ministry of Fisheries, Animal
Husbandry and Dairying,
Government of India

"It is a capital mistake to theorise before one has data."- Sherlock Holmes in "A study in Scarlet" by Arthur Conan Doyle.

The Animal Husbandry aka the Livestock sector has continued to maintain its steady, yet impressive, rate of growth, reveals the Basic Animal Husbandry Statistics (BAHS), an annual publication of the Department of Animal Husbandry and Dairying (DAHD), Government of India. BAHS, an outcome of the Integrated Sample Survey (ISS), is the most credible source of data and information on the sector as the production and other estimates are arrived at following a robust statistical methodology designed by the Indian Agricultural Statistics Research Institute of the Indian council of Agricultural Research (ICAR-IASR). The objective of BAHS, as we should understand, is to turn data into information and information into insight to guide sound policy and plans for the animal husbandry sector.

Let us summarise and dissect the salient features of the BAHS 2024 and while celebrating the incredible growth story of our animal husbandry, also introspect to flag the issues of concern which continue to hold us back from realising our true potential, the impressive milestones notwithstanding. Statistics, especially when they are of high integrity such as the BAHS, should form a sound foundation of future policy, plan and programme design and not be left to languish as an end in themselves. In fact, in my view, BAHS being a repository of reliable and timely data is an indispensable document for policy, planning and decision making.

Our livestock population, the largest in the world, during the year 2022-23 created an output valued at Rs 17,25,064 crore; add another Rs 3,83,069 crore contributed by fishery, including aquaculture, the total value of output of the Animal Husbandry and fishery sector is a whopping Rs 21,08,133 crore. It amounts to a percentage share of 6.80 in the nation's Gross Value Added (GVA) i.e. 5.50 and 1.3 percent respectively for the Livestock and Fishery sectors. In terms of contribution to the GVA of the Agriculture sector, the share of Livestock is 30.23% while Fishery stands at 7.25%. At constant price, the compound annual growth rate (CAGR) registered by the sector during the past decade is 8%.

Against this background, it would be pertinent to ask whether public investment, be it infusion of finance or infrastructure, policy ecosystem or governance priority are even remotely proportionate to the sector's contribution to the economy and nation building. After all, if the Green Revolution transformed a food deficit nation into a food secure nation, the White Revolution secured livelihoods and empowered rural producers, primarily women and the Blue Revolution has been ushering in prosperity through activities which till now were mere livelihoods. Therefore, it becomes imperative that the political and governance agenda accord a rightful priority to the sector. The data and figures outlined in the BAHS 2024 would reaffirm this.

We have been the biggest producer of milk in the world for quite some time now. In the decade gone by i.e. between 2014-15 and 2023-24, our milk production grew by 63.5%, increasing from 146.31 million tonnes to 239.30 million tonnes, with a CAGR of 5.62%. This amounts to more than one fourth of the global production. Following us is the United States of America (USA), a distant second, with a production of 102.68 million tonnes, not even half of ours. The 27 countries of the European Union (EU) collectively produced 149.33 million tonnes last year, which is about 90 million tonnes less than our production. The per capita availability of milk has increased to 471 grams per day in 2023-24, significantly higher than the 2021 global average of 394 grams per day. Complacency would be a natural, but a dangerous one, response to this data, even though spectacular.

It is a strange paradox that the richness of unparalleled production gains rests upon the poverty of productivity. The average yield per cow per day, indigenous and non-descript, stands at an embarrassing 3.54 kilogram; the performance of exotic and cross breeds at 8.43 kilogram too is nothing to boast about. The average per day in the prominent milk producing regions of the developed world is an upward of 25 kilograms, with an added benefit of utilisation of the dry animal as beef. A significant number yields 50 kilograms and more. Dairy cattle and buffaloes in the country primarily consume crop residues and by-products; poor nutrition results in low yield and inferior quality. Effective interventions, scientific and economic, are required in both breed and feed.

45.32% of India's milk production is the contribution of the buffalo, an animal we have become indifferent to in our policies and interventions despite its milk being richer in fat and despite owning three fourth of its global population. Moreover, the buffalo remains a productive economic asset beyond its milch life; buffalo meat is one of our biggest exports amongst agriculture commodities. Let there be a concerted plan to nourish this treasure.

The egg production in the country during the year 2023-24 has been a

humongous 142.77 billion putting India to the second position in the world after China. 84.59% i.e. 120.77 billion in numbers is the contribution of commercial poultry to this production, while backyard poultry produced 22.01 billion eggs constituting 15.41%. This is a clear indicator that poultry continues its journey towards vertical integration and strengthening its position as an organised industry within the generally unorganised agriculture sector. The growth rate registered over the previous year is 3.18%. Per capita availability of eggs now stands at 103 per annum; though considerable it is yet short of the National Institution of Nutrition, Hyderabad recommendation of 180 eggs per person per year. However, this should not cause concern as the recommendation of EAT-Lancet Commission, a body of world scientists that seeks to develop quantitative targets for healthy diets and sustainable food production, is a desirable intake of 90 eggs per person per year.

A glaring data that calls for response is that 64.37% of the total egg production is by five states only. Further, 53% egg production is by four southern states, their respective shares being Andhra Pradesh: 17.85, Tamil Nadu: 15.64, Telangana: 12.88, and Karnataka: 6.33. West Bengal with 11.37 percent is the fifth state. There should be no hesitation in admitting that development of poultry in our country, despite commendable, demonstrates a skewed pattern, including regional imbalance. Why so? We need to identify the causes and address them. It is surely a case for expansion and tapping the potential of poultry in other parts of the country. After all, it is the fastest growing agricultural sub-sector, especially in developing countries. Further, poultry offers the most affordable source of animal protein.

Growing at 4.95% over the previous year, we produced 10.25 million tonnes of meat in the year 2023-24 ranking fifth in the world behind China, USA, Brazil and Russia. Poultry has been the major contributor to this production comprising 48.96% followed by buffalo meat at 18.09%, goat 15.50% and sheep 11.13%

Growing at 4.95% over the previous year, we produced 10.25 million tonnes of meat in the year 2023-24 ranking fifth in the world behind China, USA, Brazil and Russia. Poultry has been the major contributor to this production comprising 48.96% followed by buffalo meat at 18.09%, goat 15.50% and sheep 11.13%. Though bereft of regional imbalance as is the case of egg production, quite akin to eggs the meat production sector too shows lopsided development. 57.46% of the total production is the contribution of only five states viz., West Bengal: 12.62, UP: 12.29, Maharashtra: 11.28, Telangana: 10.85, and Andhra Pradesh: 10.42. Such stark variations in production patterns does raise serious questions that we need to answer, especially why the immense opportunities the livestock sector offers are going abegging in several parts of the country.

"Data is the new oil," says Clive Humby, a British mathematician and data scientist. It is valuable, like oil, but it cannot really be used if unrefined. BAHS has, as in each year, given us invaluable data collected, compiled and collated painstakingly. Let us now analyse and refine it for informed decision making.

Article

# Effective Management Practices to Reduce the Incidence of Ascites in Broilers

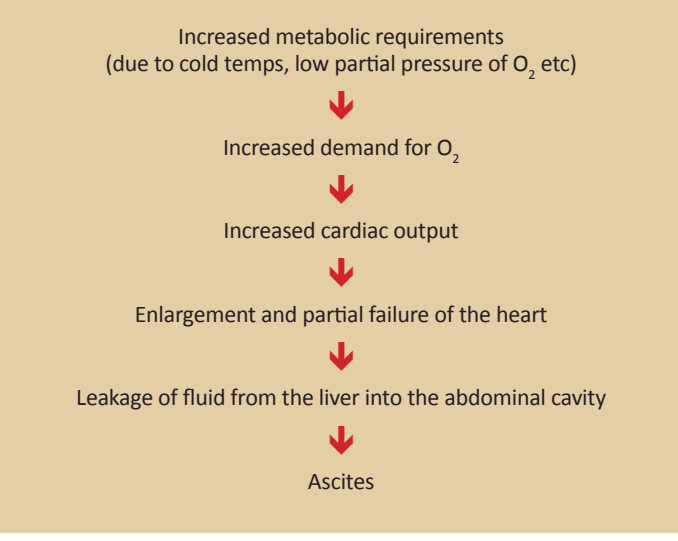
Aviagen India Technical Services


## Summary

Ascites is a multi-factorial syndrome caused by interactions between physiological, environmental and management factors. Its presence in a broiler flock will have a significant effect on the biological and economical performance of the flock. The key to preventing Ascites is ensuring that good basic management is adhered to, particularly with regards to ventilation.


## What is Ascites?

Factors that increase the workload of the heart, by increasing the demand for oxygen (such as fast growth rate, cold stress, low partial pressure of oxygen or respiratory diseases) can lead to Ascites.




Leakage of fluid from the liver into the abdominal cavity eventually restricts breathing, and ultimately can lead to death.

## Reducing the Incidence of Ascites in Broiler Flocks

### 1. Ensure adequate ventilation from placement to depletion

Ventilation rates should be linked to house biomass, supplying enough air to replenish the oxygen consumed and ensure the adequate removal of waste gases. Providing sufficient oxygen is vital at high altitudes. Oxygen is a constant percentage of air, but at low atmospheric pressures associated with altitude, the absolute levels of oxygen may predispose birds to Ascites, particularly when other factors increase metabolic rate.

### 2. Maintain air quality

This is linked to good ventilation and appropriate litter management. High levels of air contaminants (e.g. carbon monoxide, carbon dioxide and dust) cause respiratory damage. This reduces respiratory efficiency and blood oxygen levels increasing the risk of Ascites.

### 3. Avoid periods of cold stress particularly during the brooding period

Exposure to cold periods increases the metabolic rate (oxygen demand) and can predispose/lead to Ascites later in the production period. At placement floor temperatures should be 28-30°C (82-86°F), air temperature should be 30°C (86°F), and relative humidity between 60 and 70%.

### 4. Feed programmes to control early growth

Well managed feed programmes to control early growth (e.g reducing the nutrient density of the diet, changing feed form) may help reduce Ascites. Implement programmes after 7 days of age to ensure chicks get a good start.

### 5. Lighting Programmes

An additional 1-2 hrs. of dark added to the recommended 4 hrs. for broilers <2.5kg/5.5lbs (from 8 days of age to slaughter) or 6 hrs. for broilers >2.5kg/5.5lbs (from 8 days of age to slaughter) may help reduce Ascites. Do not implement lighting programmes before 7 days of age.

### 6. Incubation and Ascites

Ensure adequate ventilation is achieved during the latter stages of incubation, particularly if incubation occurs at high altitudes.

## Key Points

- If incubating at high altitudes, ensure adequate ventilation is achieved
- Achieving appropriate ventilation (based on house biomass) from placement through to depletion is essential (particularly at high altitudes). Check ventilation rates and equipment regularly
- Prevent unnecessary increases in metabolic rate due to periods of cold stress, particularly during the brooding period
- Well managed growth control programmes implemented after 7 days of age may also help where the incidence of Ascites is high

## Introduction

Ascites, water belly, or pulmonary hypertension syndrome, is a disease of broiler chickens which can occur worldwide but tends to be most prevalent at high altitudes. Its presence in a broiler flock will have a significant effect on the performance of the flock both biologically and economically.

Ascites is a multi-factorial syndrome caused by interactions between physiological (e.g. $O_2$ demand), environmental, (e.g. altitude) and management (e.g. ventilation, disease status) factors. Although Ascites may be most common at high altitudes, broilers grown at low altitudes with substandard environmental conditions and poor brooding techniques can also have higher mortality and processing downgrades as a result of increased Ascites incidence.

This article aims to give an overview of the factors that can predispose to Ascites and the effective management practices that can be put in place to reduce its incidence in broiler flocks.

## What is Ascites?

Understanding Ascites is the first step to reducing or stopping its incidence in broiler flocks.

Any factors that increase the workload of the heart, by increasing the demand for oxygen (e.g. fast growth, reduced environmental temperatures, low partial pressure of oxygen or respiratory diseases) can lead to Ascites. When the workload on the heart and lungs is increased, a chain of events is triggered (Figure 1) which leads to reduced levels of oxygen in the blood. In the initial stages this can be detected by a slight darkening of the comb and wattles. As the disease progresses fluid (leaked from the liver) accumulates in the abdominal cavity. Eventually this restricts breathing (it is at this stage that the comb and wattles exhibit a dark blue), ultimately this restriction can lead to death.

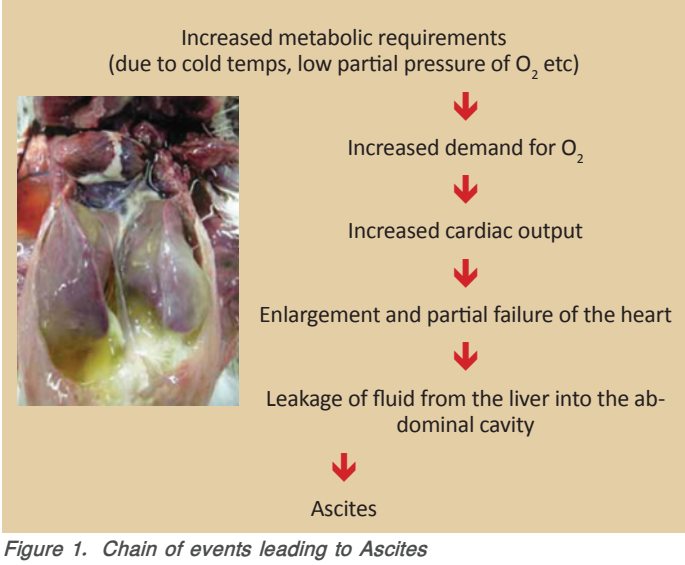



*Figure 1. Chain of events leading to Ascites*

## Reducing the Occurrence of Ascites in Broiler Flocks

### *Genetic Factors*

Historically broilers with faster growth rates were more likely to develop Ascites due to the increased demand that this fast growth placed on the heart. However, with appropriate selection strategies the predisposition of fast-growing broilers to Ascites has been reduced. As a direct response to the concerns of the poultry industry for the last two decades Aviagen has incorporated the routine assessment of birds for the oxygen saturation level in blood ($SaO_2$) into its selection strategy. Birds with high levels of $SaO_2$ have a reduced susceptibility to Ascites and Sudden Death Syndrome. The Aviagen breeding programme has an ongoing focus on improving the cardiovascular health of its pedigree populations and hence their products. This is done by discarding individuals and families with below average levels of $SaO_2$. Over time this has led to a significant increase in the $SaO_2$ levels of the blood (Figure 2), reducing the susceptibility of our products to Ascites. This selection policy has allowed a long-term genetic trend of improvement in key broiler traits while at the same time reducing the incidence of metabolic disorders and improving livability.

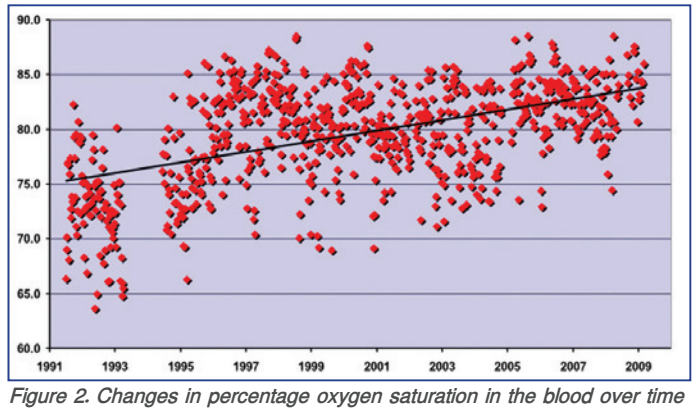



*Figure 2. Changes in percentage oxygen saturation in the blood over time*

## Influence of Environment on Ascites

### *Ventilation and Ascites*

The most influential environmental factor affecting Ascites in broilers is the oxygen content of air brought into the poultry house.

Growing at higher altitudes (1000m or above) is commonplace in some regions of the world. Ascites symptoms are more acute at high altitudes as the air has a lower partial pressure of oxygen than that at sea level. Exposure to a lower partial pressure of oxygen will lead to an increased workload on the heart. In this situation it is critical to ventilate correctly and provide as much oxygen to the flock as possible.

Suboptimal ventilation in broiler houses leads to low environmental oxygen and higher toxic gases such as carbon monoxide, carbon dioxide and ammonia. This will put extra pressure on the cardio vascular system, reducing its capacity to carry oxygen and increasing Ascites. Ventilation rates must supply enough air to replenish the oxygen consumed and ensure the adequate removal of waste gases. Managers who run a constantly increasing, pro-active ventilation programme, linked with total house biomass, have no or much reduced levels of Ascites in their flocks.

A good way to manage the ventilation programme is by using fan cycle timers, increasing "On" time as the flock gets older and house biomass increases. The example below (Figure 4)

explains how this can be done. Often fans can be inefficient compared to the declared ratings (due to baffles, age etc). Fans should be checked regularly and the ventilation programme adjusted accordingly.

| Live Weight kg (lbs) | Minimum Ventilation Rate | | Maximum Ventilation Rate | |
|---|---|---|---|---|
| | m3/hour | (ft3/min) | m3/hour | (ft3/min) |
| 0.050 | 0.074 | (0.044) | 0.761 | (0.448) |
| 0.100 | 0.125 | (0.074) | 1.280 | (0.754) |
| 0.200 | 0.210 | (0.124) | 2.153 | (1.268) |
| 0.300 | 0.285 | (0.168) | 2.919 | (1.719) |
| 0.400 | 0.353 | (0.208) | 3.621 | (2.133) |
| 0.500 | 0.417 | (0.246) | 4.281 | (2.522) |
| 0.600 | 0.479 | (0.282) | 4.908 | (2.891) |
| 0.700 | 0.537 | (0.316) | 5.510 | (3.245) |
| 0.800 | 0.594 | (0.350) | 6.090 | (3.587) |
| 0.900 | 0.649 | (0.382) | 6.653 | (3.919) |
| 1.000 | 0.702 | (0.413) | 7.200 | (4.241) |
| 1.200 | 0.805 | (0.474) | 8.255 | (4.862) |
| 1.400 | 0.904 | (0.532) | 9.267 | (5.458) |
| 1.600 | 0.999 | (0.588) | 10.243 | (6.033) |
| 1.800 | 1.091 | (0.643) | 11.189 | (6.590) |
| 2.000 | 1.181 | (0.696) | 12.109 | (7.132) |
| 2.200 | 1.268 | (0.747) | 13.006 | (7.661) |
| 2.400 | 1.354 | (0.798) | 13.883 | (8.177) |
| 2.600 | 1.437 | (0.846) | 14.42 | (8.683) |
| 2.800 | 1.520 | (0.895) | 15.585 | (9.180) |
| 3.000 | 1.600 | (0.942) | 16.412 | (9.667) |
| 3.200 | 1.680 | (0.990) | 17.226 | (1 0.146) |
| 3.400 | 1.758 | (1.035) | 18.028 | (10.618) |
| 3.600 | 1.835 | (1.081) | 18.817 | (11.083) |
| 3.800 | 1.911 | (1.126) | 19.596 | (11.542) |
| 4.000 | 1.986 | (1.170) | 20.365 | (11.995) |
| 4.200 | 2.060 | (1.213) | 21.124 | (1 2.442) |
| 4.400 | 2.133 | (1.256) | 21 .874 | (1 2.884) |

Using the table Calculate the total ventilation rate required for the house (Total cubic meters per hour (cmh) or Total cubic feet per minute (cfm) as:

Total minimum = minimum ventilation rate per bird (from table) X number of birds in house

Calculate the percentage time for running the fans as:

$$\text{Percentage of Time} = \frac{\text{total ventilation needed}}{\text{total capacity of the fans used}}$$

Multiply the percentage of time needed by the total fan timer cycle to give the time that the fans require to be on in each cycle

*Figure 4. Methodology for calculating minimum ventilation rates based on house biomass and percentage time for running fans to achieve that ventilation rate at sea level.*

### *Air Quality and Ascites*

Correct litter management in conjunction with appropriate ventilation, helps to maintain air quality. Suboptimal ventilation and inadequate litter management leads to problems of wet litter, and increased ammonia levels. Dust within the environment will be inhaled by the birds, leading to irritation and reduced efficiency of the airways.

Poor air quality, dust and respiratory diseases all predispose birds to Ascites by causing respiratory damage, thereby reducing the efficiency of respiration and blood oxygen levels. For the same reasons it is important that the litter material is clean and free from mould or contamination at time of placement.

Table 1 shows the common air contaminants present in the poultry house and the effect that they have on bird health. All the contaminants listed below either predispose or lead directly to Ascites.

**Table 1. Common house air contaminants that can increase Ascites susceptibility**

| Contaminant | Effect |
|---|---|
| Ammonia | Can be detected by smell at 20ppm or above<br>>10ppm will damage lung surface<br>>20ppm will increase susceptibility to respiratory diseases<br>>50ppm will reduce growth rate |
| Carbon Dioxide | >3500ppm causes Ascites and is fatal at high levels |
| Carbon Monoxide | 100ppm reduces oxygen binding and is fatal at high levels |
| Dust | Damage to respiratory tract lining and increased susceptibility to disease |
| Humidity | Effects vary with temperature. At >29˚C (84˚F) and >70% relative humidity, growth will be affected |

### *Temperature and Ascites*

Maintaining adequate brooding temperatures are critical to the prevention of Ascites. Exposure to cold periods which place birds outside their thermo-neutral zones will increase the demand for oxygen as birds are forced to use energy to keep warm. This increase in metabolic rate can lead to Ascites later in the production period. Correct and monitored temperature during brooding, linked with a good minimum ventilation programme from placement, will help reduce and in some cases eliminate any Ascites problems seen later in the grow-out period.

**Table 2. Correct brooding temperature profiles assuming an ideal RH of 60-70%**

| Age (days) | Whole-house Brooding | Spot Brooding | |
|---|---|---|---|
| | Temp | Temp | |
| | Temp | Brooder Edge (A*) | 2 m (6.6 ft) From Brooder Edge (B*) |
| Day Old | 30°C | 32°C | 29°C |
| | 86°F | 90°F | 84°F |
| 3 | 28°C | 30°C | 27°C |
| | 82°F | 86°F | 81°F |
| 6 | 27°C | 28°C | 25°C |
| | 81°F | 82°F | 77°F |
| 9 | 26°C | 27°C | 25°C |
| | 79°F | 81°F | 77°F |
| 12 | 25°C | 26°C | 25°C |
| | 77°F | 79°F | 77°F |
| 15 | 24°C | 25°C | 24°C |
| | 75°F | 77°F | 75°F |
| 18 | 23°C | 24°C | 24°C |
| | 73°F | 75°F | 75°F |
| 21 | 22°C | 23°C | 23°C |
| | 72°F | 73°F | 73°F |
| 24 | 21°C | 22°C | 22°C |
| | 70°F | 72°F | 72°F |
| 27 | 20°C | 20°C | 20°C |
| | 68°F | 68°F | 68°F |

**These brooding temperatures are a recommendation. Actual brooding temperatures will depend on environmental and management conditions in the house. For more information on brooding temperatures consult your local Aviagen field representative.*

At placement floor temperatures should be 28-30°C (82-86°F), and air temperature (measured at bird level) should be 30°C (86°F), with relative humidity between 60 and 70%. Table 2 shows a good brooding temperature profile for the broiler house. The temperatures recommended in Table 2 assume an ideal relative humidity (RH) of 60-70%. If RH is outside this ideal range the temperature of the house at bird level should be adjusted. For example, if RH is below 60% or above 70%, the dry bulb temperature may need to be increased or decreased respectively.

Duration of cold stress is much more critical than temperature itself. Metabolic stress and risk of Ascites will be increased with duration of cold stress. It is, therefore, vital that if periods of cold stress do occur, they are rectified as quickly as possible.

## Influence of Growth Rate on Ascites

There is a direct correlation between metabolic rate and Ascites levels. A fast growth rate increases the demand for oxygen and hence the workload of the heart. Therefore, adapting good management practices is vital for fast growing broilers.

Growers who have recurring problems with Ascites may find it beneficial to control early growth rates. The first 3 weeks of a bird's life are metabolically stressful as bone and muscle growth are greatest at this time. If growth is reduced during this period oxygen demand will also be reduced. Birds whose growth is controlled early on may have a stronger cardiovascular system going into the finisher phase. However, any restriction of early growth should be exercised with caution. Achieving adequate growth during the first 7 days is vital and so any growth control should be implemented after 7 days of age. Starter diets should remain unchanged to ensure that the day-old chick has the best possible start.

Effective control of growth rate after 7 days of age can be achieved by reducing nutrient intake either by reducing the nutrient density of the diet or by changing feed form from a pellet to a mash. Any feed programme must be managed properly and should only be considered once optimal management is assured. It is also important to consider that feed control may result in an overall reduction in growth rate. Any management strategy aimed at reducing early growth is, therefore, only likely to be economically viable when it is properly managed and where the occurrence of Ascites is severe.

## Lighting and Ascites

Many growers in high altitude areas use lighting programmes to help reduce early body weights and hence Ascites levels in their flocks. However, lighting programmes are often too severe (e.g. the use of natural daylight only).

At low altitudes lighting programmes to control Ascites are unnecessary for Aviagen products, having a negative impact on growth rate and breast meat yield. High altitude does change the situation, however, with lower partial pressures of oxygen and absolute humidity levels. Examples of typical good lighting programmes are given in Table 3. If Ascites is a problem under high altitude conditions, some increase in the dark period (an additional 1-2 hrs added to those recommended in Table 3) may help reduce Ascites mortality. To help ensure proper heart and lung development in growing birds, it is essential that 7-day body-weight targets are achieved; lighting programmes should not be implemented until after 7 days of age.

**Table 3. Basic light intensity and photoperiod recommendations to optimise live performance.**

| Live weight at slaughter | Age (days) | Intensity (lux/ ftc) | Day length (hours) |
|---|---|---|---|
| Less than 2.5kg/5.5lb | 0-7 | 30-40/3-4 | 23 light 1 dark |
| | 8-slaughter | 5-10/0.5-1 | 20 light 4 dark* |
| More than 2.5 kg/5.5lb | 0-7 | 30-40/3-4 | 23 light 1 dark |
| | 8-slaughter | 5-10/0.5-1 | 18 light 6 dark* |

**The EU Broiler Welfare Directive requires a total of six hours darkness, with at least one uninterrupted period of darkness of at least four hours.*

## Incubation and Ascites

It has already been mentioned that an increased metabolic rate, paralleled with a shortage in oxygen supply will lead to Ascites. One of the most demanding stages of chicken development is in the incubator. Chickens incubated at high altitudes may be predisposed to Ascites because the partial pressure of oxygen is lower. It is, therefore, important that adequate ventilation in the incubator is achieved. Achieving adequate ventilation may be a particular issue in single stage machines; in the setter the air vents should be left fully opened for the last three days to ensure that ventilation, and hence oxygen levels are optimal.

## Conclusions

In conclusion, Ascites is a multi-factorial syndrome caused by interactions between physiological, environmental and management factors. The incidence of Ascites can be reduced by ensuring that good basic management practices are adhered to.

- If incubating at high altitudes ensure adequate ventilation is achieved
- Achieving appropriate ventilation in the poultry house from placement through to depletion is essential, particularly at high altitudes; ventilation rates must supply enough air to replenish the oxygen consumed and ensure the adequate removal of waste gases. Check ventilation rates and equipment regularly making any adjustments as required
- Preventing unnecessary increases in the birds' metabolic rate due to periods of cold stress, particularly during the brooding period, will help reduce or even eliminate the occurrence of Ascites later on in the growing period
- Well managed growth control programmes implemented after 7 days of age may also help where the incidence of Ascites is high.

A better understanding of what Ascites is and how it is caused, and the implementation of management factors that reduce the predisposing factors to Ascites will ultimately help to control the occurrence of Ascites in broiler flocks.

## Arab Countries Step up Poultry Imports from Brazil

# INTERNATIONAL

The United Arab Emirates, Saudi Arabia, and Iraq increased their imports of Brazilian chicken meat and ended the year among the top ten international customers of the product. According to the 2024 report and 2025 outlook released by lobby group ABPA, the sector is also expected to set a record this year for poultry production and exports.

The President of ABPA, Ricardo Santin, said countries consuming halal protein are long-time buyers of Brazil and have shown consistent growth in imports of Brazilian chicken meat.

According to ABPA data, China was the top importer of Brazilian chicken meat and imported 508,700 tonnes between January and November, a 19.5% decrease compared to the same period in 2023. The UAE was the second largest destination, purchasing 424,700 tonnes, a 7.2% increase compared to the same period from January to November last year. Saudi Arabia was the fourth largest destination, importing 341,100 tonnes of chicken meat through November, with a 1.1% increase over the same period in 2023. Iraq, the 9th largest destination, bought 166,300 tonnes, a 20.9% rise compared to 2023. Together, these three countries accounted for 20% of Brazil's chicken meat exports.

"It's an increase in local production. We know about Saudi Arabia's Vision 2030 [to diversify its economy away from oil], aiming for 80% local production and 20% imports. It's a decision they've made within their autonomy, and I don't see other suppliers, but rather, local production growing and Brazil complementing where possible," said Santin

Another segment that saw growth in 2024 was the export of eggs from Brazil to the United Arab Emirates and Qatar, despite a decline in overall exports of the product. A total of 16,400 tonnes of eggs were exported year to date through November, a decrease of 32.9% compared to the same period in 2023.

Among the Arab countries, the UAE, the third-largest buyer, imported 1,900 tonnes of eggs between January and November, a rise of 123.5% compared to the same period in 2023. Qatar, the fifth-largest destination of these exports, imported 1,020 tonnes, an increase of 7.7% this year through November compared to the same period in 2023.

## West Bengal Rises as India's Largest Chicken Meat Producer

# NATIONAL

West Bengal has emerged as the largest chicken meat producer in India, surpassing traditional poultry giants like Tamil Nadu, Andhra Pradesh, and Maharashtra. This milestone is not only a reflection of the state's booming poultry industry but also highlights the changing consumption patterns, economic opportunities, and advancements in the livestock sector within the region.

The recently released Basic Animal Husbandry Data compiled by the Department of Animal Husbandry and Dairying (DAHD), Government of India says that India produced 10.25 million tonnes of meat in 2023-24. Poultry at 48.96% is the largest contributor to this. 57.46% of the total is the contribution of five states with West Bengal leading at 12.62% followed by Uttar Pradesh, Maharashtra, Telangana and Andhra Pradesh.

While West Bengal has traditionally been known for its preference towards fish, over the last decade it has witnessed a significant shift in dietary habits, particularly among the younger population. With increasing urbanisation, rising disposable incomes, and a growing awareness of protein-rich diets, chicken meat has gained immense popularity due to its affordability, accessibility, and versatility in cooking.

Commenting on this achievement on X (formerly Twitter), Chief Minister, Mamata Banerjee said, "Delighted to know that Bengal has become India's largest animal protein producer, overtaking even the large state of Uttar Pradesh. GoI has acknowledged that and lauded Bengal in public domain. As per GoI's just published Animal Husbandry Statistics 2024, Bengal is now the country's highest producer of meat, contributing 12.62% of the national output. In milk production, West Bengal has recorded the highest annual growth rate in the country i.e., 9.76% against the national average of 3.78%. In the poultry sector, our annual growth rate in egg production is 18.07% as against the national average of 3.18%. All these achievements are testaments to our innovative policies and programmes and indicate the robust strength of our farmers and producers."

According to Madan Mohan Maity, General Secretary, West Bengal Poultry Federation, "West Bengal has achieved a remarkable milestone by securing the 1st position in chicken meat production, as per the latest data from the Government of India. This accomplishment highlights the state's significant contribution to the poultry industry, showcasing its advanced farming practices, efficient supply chains, and growing demand for poultry products. Additionally, West Bengal leads the nation with the highest annual growth rate of 18.07% in egg production, far surpassing the national average of 3.18%. This outstanding performance in egg production further cements the state's leadership in the poultry sector. These achievements not only support the state's economy but also reinforce its position as a key player in India's agricultural landscape. It is a testament to the dedication of farmers, entrepreneurs, and stakeholders within the poultry industry."

West Bengal's ascent to becoming India's largest chicken meat producer reflects its resilience, adaptability, and entrepreneurial spirit.

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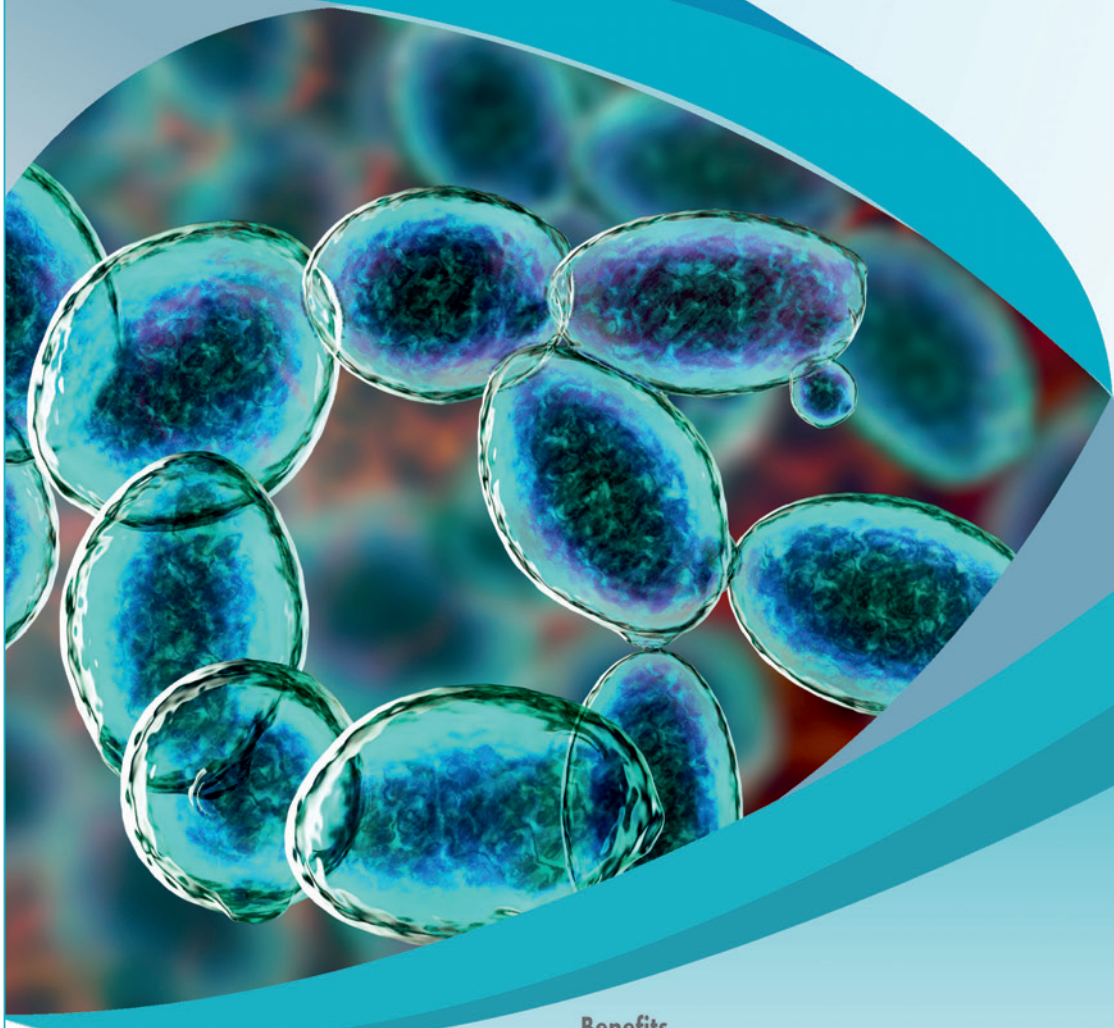

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# POULTRY INDIA 2024


The 16th edition of Poultry India Expo 2024 was organised at HITEX Exhibition Centre Hyderabad from 27th to 29th November. Hosted by Indian Poultry Equipment Manufacturers Association (IPEMA), the expo showcased a dynamic blend of innovation, expertise, and collaboration, cementing its reputation as South Asia's premier poultry industry platform.

With the theme, "Unlocking Poultry Potential", the expo attracted more than 400 exhibitors from over 50 countries and over 42,000 visitors over the span of three days.

Poultry Knowledge Day 2024 held on 26th November served as the curtain raiser for Poultry India Expo. This day-long seminar focussed on the theme, "Shaping the Future of Indian Poultry Sector", brought together more than 1500 delegates and featured multiple technical sessions focussing on key areas in poultry production, including innovations in feed mills, animal health, and poultry nutrition.

Speakers at Poultry Knowledge Day 2024 were:

| | |
|---|---|
| **Dr. Chin How Cheong**<br>Technical Consultant | Avian Influenza: Strategies for Prevention & Control |
| **Dr. M.R. Reddy**<br>Principal Scientist - Avian Health Section, ICAR-Directorate of Poultry Research, Hyderabad | Strategies to Control Inclusion Body Hepatitis (IBH) an Emerging Health Problem in Broilers |
| **Mr. Bahadur Ali**<br>Managing Director, IB Group & Chairman, All India Poultry Breeder Association (AIPB) | Broiler Integration - Challenges & Its Solutions |
| **Mr. Devan Krishnan**<br>Business Development Manager, Big Dutchman | Poultry Waste to Wealth by Composting Technology |
| **Mr. Pranav Goyal**<br>Partner, Real Foods Punjab | Poultry Waste to Wealth by Composting Technology |
| **Mr. Nivesh Saravanakumar**<br>CEO, Rasi Foods & Feeds Pvt. Ltd. | Poultry Exports - Challenges & Opportunities (Whole Eggs) |
| **Mr. Satish Babu**<br>Chairman Ovobel Foods Ltd. | Poultry Exports - Challenges & Opportunities (Egg Powder & Liquid Eggs) |
| **Mr. Abhay Parnekar**<br>CEO, Godrej Tyson Foods Ltd. | Value Creation through Marketing of Chicken |

Popular public speaker, entrepreneur, philanthropist and CEO of Bollant Industries , Shrikanth Bolla, featured as the Motivational Speaker, a high point every year for Poultry Knowledge Day.

In his welcome address, Prof. (Dr.) P. K. Shukla provided an overview of Poultry Knowledge Day 2024. He said that today, the poultry sector contributes 1% to the nation's GDP – a wonderful achievement. He added that the poultry sector is maintaining pace with the growing Indian economy. Speaking about the positive developments, Prof. Shukla said that this year maize and soya production have seen bumper crops and the government has permitted LPAI vaccination of poultry birds. Growing EC housing is aiding efficiency of production. He added that with the positive developments, India is emerging as a significant global producer of food from animal source.

The Poultry Knowledge Day organising team included Prof. (Dr.) P. K. Shukla, Dr. Vijay Makhija, Harish Garware, Dr. Ravindra Jaiswal, Dr. Jeetendra Verma, Dr. Jayaraman and Dr. Rahul Kulkarni.

The keynote address was delivered by Sabyasachi Ghosh IAS, Special Chief Secretary to the Government of Telangana's Animal Husbandry, Dairy Development & Fisheries (AHDD&F) Department. Mr. Ghosh emphasised the pivotal role of the poultry sector in India's economy, contributing nearly 1% to the nation's GDP. He highlighted Telangana's leadership in this domain, establishing the state as a hub for innovation in poultry farming and allied industries. Encouraging stakeholders to adopt advanced technologies such as artificial intelligence, he underscored the importance of leveraging these tools to boost productivity, reduce costs, and enhance operational efficiency. He stressed that embracing such innovations is essential for ensuring the industry's sustained growth and competitiveness.

Poultry India Expo 2024 was inaugurated from the stage of

Poultry Knowledge Day by Dr. O.P. Chaudhary, Former Joint Secretary, Department of Animal Husbandry and Dairying (DAH&D), Government of India. He emphasised the role of the poultry industry in India's food security and rural employment.

This year, Lifetime Achievement Awards were presented to Dr. O.P. Chaudhary and Mr. Murtaza Magdum.

Speaking at the inauguration, Uday Singh Bayas, President of IPEMA, underscored the pivotal role of the poultry sector in ensuring India's food security and bolstering the rural economy. Highlighting the industry's annual contribution of Rs.1.35 lakh crore and its role in providing essential protein to millions, Mr. Bayas stressed the urgent need for government support to sustain the sector. He brought attention to the growing challenges faced by poultry farmers, including escalating feed input costs for essentials like maize and soy, as well as the financial strain posed by GST on poultry equipment. Mr. Bayas urged policymakers to implement immediate interventions, such as GST exemptions on soy meal and poultry machinery, enhanced support for maize cultivation, and the expedited import of vaccines to address animal disease outbreaks effectively.

Various exhibitors organised innovative interactions, dialogues, launches and other activities at their respective stands.



ABTL has been a part of Poultry India since 2007 and as aways, this year's expo provided an opportunity for the company to showcase its latest products and technologies. According to a press release, ABTL's objective is to create a nation that is both economically prosperous and healthily maintained. The company believes it is creating a sustainable path for the poultry sector. In a scenario where many producers are experiencing fluctuating raw material prices due to volatile markets, ABTL's enzymatic solutions help customers reduce raw material prices by improving raw material efficiency with more sustainable alternatives.



Poultry India Expo 2024 served as a platform for Optima Life Sciences to showcase its latest innovations. One of the key highlights was the introduction of OLS-8-FOMAX, a groundbreaking foaming technology designed for disinfectants. This innovation ensures effective application and enhances farm biosecurity. Optima Life Sciences also unveiled the Inline Moisture Sensor Technology, an advanced feature integrated into its existing dosing system, OPTIMIZER. ButyESTER Pro3, a next-generation feed additive powered by Gastrointestinal Environment Harmonization (GEH) Technology was also launched during Poultry India Expo.


Srinivasa Farms, one of India's leading integrated poultry companies, showcased its commitment to innovation, sustainability, and customer engagement. The stall was a hub of activity, attracting a diverse audience from across the country evincing a keen interest to learn about the company's latest advancements in poultry farming from hatching and breeding to commercial sales. With interactive displays, live product demonstrations, and technical consultations, the team provided valuable insights to both seasoned farmers and new entrants. Srinivasa Farms also recognised its longstanding collaboration with Hy-Line International, a global leader in layer genetics. Speaking at the event, Suresh Chitturi, Managing Director, Srinivasa Farms, said, "The Poultry India Expo 2024 has been an exceptional opportunity for us to engage with all stakeholders, understand emerging trends, and showcase our solutions tailored to meet the evolving needs of the industry. We are committed to supporting farmers with innovative products and sustainable practices that drive profitability and efficiency."

Immeureka Animal Health organised two interactive sessions at their booth – XPEL ADDA and PERFORZA ADDA. These sessions were designed to create a platform for experience sharing and fostering meaningful conversations among industry stakeholders.



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# Engaging Session by NBSO


On 27th November, coinciding with the 16th Poultry India Expo 2024, the Agriculture Department at the Netherlands Embassy and the Netherlands Business Support Office, Hyderabad, organised a session, "Our Indo-Dutch Journey So Far." Over the years, this session has developed into a regular feature during Poultry India Expo and highlights the expertise and progressive approach of Dutch companies involved in the poultry sector.

Speaking at the session, Michiel van Erkel, Agriculture Counsellor at the Netherlands Embassy said that Dutch companies had found their way successfully into the Indian poultry sector and are doing quite well. He added that his role required him to support and facilitate the entry of Dutch entrepreneurs into the Indian market and he felt that the opportunities in the sector are very big. He went on to say that the Netherlands is very big on innovation and believes that there is some real value addition it can provide to the Indian poultry sector. Currently there are about 25 Dutch companies working in the poultry sector in India, added Mr. Erkel.





Speakers at the session were:

- Gerry Oude Elferink, Director – Nutrition Support, De Heus India (Precision Feeding & Farming in Poultry)
- Dr. Anurag Jena, General Manager, Alpha Feeds (Artificial Intelligence & Poultry – The Future)
- Leon Husson, PUM Experts (Atmanirbhar Bharat & PUM)

The session was moderated by Selvan Kannan of Value Consultants and a recognised industry expert.

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# Lumis at Eurotier


Lumis Enzymes recently participated in EuroTier, Germany, one of the leading international trade fairs for professional animal farming and livestock management. Consistent participation at EuroTier has enabled the company to strengthen relationships with existing clients while expanding its market presence. This year's exhibition was a resounding success.

The Lumis Enzymes team showcased its unique enzyme portfolio, highlighting the technical features and significant benefits of its products. Visitors responded enthusiastically, expressing strong interest in the potential of these enzymes to address specific challenges in the feed industry.

Attendees at the Lumis stand were particularly impressed with the sustainability and value of the products, noting their relevance in supporting the feed industry's shift toward more sustainable practices. A key focus of the exhibition was demonstrating how Lumis' sustainable enzyme solutions enhance feed efficiency, reduce waste, and optimise animal nutrition. These themes resonated strongly with visitors, reflecting the growing industry emphasis on integrating sustainability into operations.

By offering solutions that align with both economic and environmental objectives, Lumis Enzymes is positioned as a key partner in shaping the future of the feed industry.




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# National Chicken Day 2024 Celebrations


National Chicken Day was celebrated on 16th November, for the fourth consecutive year, in memory of Padmashree Dr. B. V. Rao. The day aimed to honour Dr. Rao's contributions to the poultry industry and promote the consumption of chicken across India.

This year's celebrations saw enthusiastic participation from various regions and stakeholders. Approximately 900 shops nationwide actively participated by displaying National Chicken Day banners, offering attractive discounts on chicken, and providing free eggs alongside chicken purchases. These initiatives were met with a positive response from customers, highlighting the increasing popularity of chicken as a staple in Indian households.

The event was made possible through the collaborative efforts of key contributors from West Bengal, Chhattisgarh, Maharashtra, and Karnataka. Notably, the Assam Association and North India Broiler Breeder Association alongwith Venkys India joined hands to expand the celebrations further, showcasing the growing support for this initiative.

National Chicken Day continues to serve as a testament to the enduring legacy of Dr. B. V. Rao. It unites the poultry industry in a shared mission to boost chicken consumption and support the livelihoods of those involved in the sector. Stakeholders are urged to extend their support in promoting this event further, ensuring its continued success in the coming years.



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FAMbs

# FIAB Organises Seminar in Dhaka



The seminar "Future of Feed Formulation: Nutrition, Innovation and Sustainability," held on 7th December in Dhaka and organised by the Feed Industries Association Bangladesh (FIAB) with support from USSEC, Paragon Feeds, Nourish Poultry & Hatchery and ACI Godrej Agrovet highlighted the importance of innovative and sustainable feed formulation practices for the livestock and aquaculture industries.

Chief Guest, Dr. Md. Reajul Huq, Director General of the Department of Livestock Services, emphasised the production of quality animal feed while ensuring feed safety and environmental care. He also advocated exploring alternative raw materials to lower costs. Sarah Gilleski, Agricultural Attaché at the U.S. Embassy, stressed the need for leveraging advanced technologies and sustainable practices, such as utilising renewable resources like U.S. Soy, to meet the increasing global demand for animal protein without harming the planet.

Moshiur Rahman, President of WPSA-BB, urged the industry to prioritise nutritional quality over feed conversion ratios (FCR) to avoid the misuse of antibiotics. He called for transparency and consumer-focused practices, emphasising a preference for broiler chickens with longer rearing periods for better quality.

Dr. Amit Das, leading Nutritionist & Consultant from India presented the keynote paper.

Khabibur Rahman from USSEC noted the rising feed mill numbers in Bangladesh, attributing it to increasing demand for poultry and eggs. He highlighted the industry's role in meeting local and regional needs while promoting sustainability through U.S. Soy.

Experts presented on topics such as precision nutrition, regulatory compliance, and sustainable feed practices. Dr. Susil Silva and Dr. Chadrasekar Sankaranarayanan highlighted the environmental benefits of soybean meal in poultry and aquaculture feed. The event concluded with a call for continued innovation, quality maintenance, and collaborative efforts between countries to address global sustainability challenges. Md. Ahsanuzzaman, Senior Vice-President, FIAB delivered the closing remarks and hand handed over certificates were awarded to participants.

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# Glocrest Launches Calcitrol-D

Glocrest Pharmaceutical's revolutionary product, Calcitriol-D, developed in the Netherlands, was unveiled during the Poultry India Expo. This launch signifies a transformative milestone in poultry nutrition, aimed at enhancing health and productivity for flocks worldwide.

The event was graced by the presence of consultants, breeders, integrators, and layer farmers from India, Nepal, and Sri Lanka.

The company's CEO, Dr. Ramdas S. Kambale, delivered an insightful presentation on the organisation and product, while keynote speaker S.V. Rama Rao, a renowned scientist, provided valuable insights into various derivatives of Vitamin-D3.

Calcitriol-D is poised to bring a nutritional revolution, benefiting stakeholders across the poultry industry and paving the way for a healthier future.





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# Indian Poultry Alliance Launched

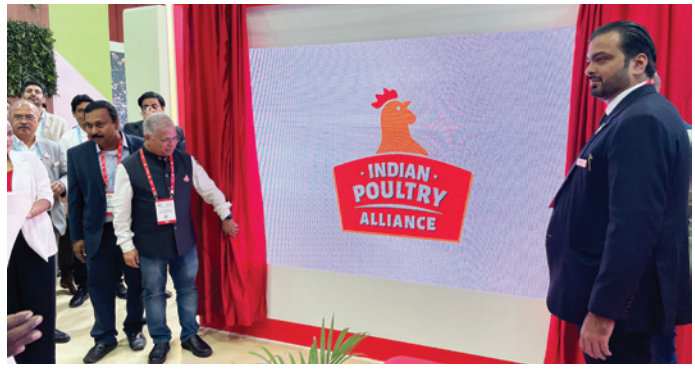

The Allana Group unveiled the Indian Poultry Alliance during 16th Poultry India 2024. This initiative signals the group's significant entry into India's growing poultry sector, aiming to transform poultry production and consumption through fully integrated operations and advanced processing technologies.

The Indian Poultry Alliance offers comprehensive solutions, covering breeder farms, hatcheries, feed plants, broiler contract farming, value-added products, and rendering plants. With a strategic presence in key regions such as Kashmir, Punjab, Aligarh, Unnao, Kishanganj, Aurangabad, Belgaum, Zaheerabad, and Coimbatore, the Alliance is equipped to address the diverse needs of QSR chains, food services, government agencies, and e-commerce platforms.

Collaborations with industry leaders like Premium Chick Feed, Kwality Animal Feeds Pvt. Ltd, Kasturi Poultry, and Chatha Foods bolster the Alliance. These partnerships ensure the availability of high-quality inputs, efficient processing, and innovative value-added products. Reflecting the Allana Group's sustainability goals, the Alliance will optimise by-product utilisation through its rendering plants, supporting Asia's largest pet food facility located at the Zaheerabad campus.

Speaking at the launch, Moiz Chunawala, Director of Stretaegic Business Development, Allana Group said, "By leveraging our extensive and legacy experience in the food business along with world-class infrastructure, we aim to create a superior and sustainable poultry market in India. To achieve this, we will invest in state-of-the-art facilities, adopt advanced technologies, and prioritise sustainable practices throughout our operations. Additionally, our network of 4,000 retail stores will ensure that consumers have easy access to fresh, high-quality poultry products. By integrating advanced technologies, such as automated feed systems and precision breeding, we aim to significantly improve efficiency and sustainability in the poultry industry. Additionally, our focus on sustainable practices, including responsible waste management and ethical sourcing, will set new industry standards. Ultimately, our goal is to deliver exceptional value to our partners and consumers alike, ensuring a reliable supply of high-quality, affordable poultry products."

"The establishment of the Indian Poultry Alliance is a significant milestone for India's poultry sector. It promises to enhance production efficiency and product quality, benefiting both producers and consumers. The launch of the Indian Poultry Alliance represents a bold step in the Allana Group's journey of innovation and quality, promising to transform India's poultry industry with its integrated, sustainable, and consumer-focused approach," commented Dr. C.R. Behl, Chairman of Indian Poultry



# Remembering Bishnu Bose


1972 - 2024

# Award for Anmol Feeds


Amit Saraogi, Managing Director, Anmol Feeds was conferred the Best Fisheries Enterprise / Entrepreneur award by the National Fisheries Development Board (NFDB) on 21st November, World Fisheries Day 2024.

This recognition, which includes a Certificate of Merit and a cash prize of Rs 1 lakh, celebrates Anmol Feeds' exceptional contributions to the aquaculture industry.

The awards ceremony held at Sushma Swaraj Bhawan, Chanakyapuri, New Delhi, was attended by a distinguished gathering of leaders and policymakers including Rajiv Ranjan Singh, Hon'ble Minister of Fisheries, Animal Husbandry & Dairying and Minister of Panchayati Raj; Prof. S.P. Singh Baghel, Hon'ble Minister of State, Ministry of Fisheries, Animal Husbandry & Dairying and Ministry of Panchayati Raj; George Kurian, Hon'ble Minister of State, Ministry of Fisheries, Animal Husbandry & Dairying and Ministry of Minority Affairs and Dr. Abhilaksh Likhi IAS, Secretary, Department of Fisheries,



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# Announcement

# Glamac Wins 'Veterinary Pharma Company of the Year' Award


Glamac International Pvt. Ltd., a leading veterinary formulation company was recently honoured with the prestigious 'Veterinary Pharma Company of the Year' award at the GEEF Global Sustainable Development Summit & Awards 2024. The award celebrates Glamac's excellence and contributions to sustainable veterinary formulations in the healthcare category, underscoring its commitment to innovation and R&D for a healthier and more sustainable future.

The GEEF (Global Excellence and Eminence Forum) Awards spotlight exceptional achievements across industries on a global scale. This year's summit brought together over 200 participants, including senior government officials, industry leaders, policymakers, and technocrats. The discussions centered on the pivotal role of modern healthcare infrastructure in advancing India's Sustainable Development Goals (SDGs) vision for 2047. The event was organised by The GEEF Foundation with support from the Department of Science & Technology, Government of India.

A total of 26 winners were recognised across 14 diverse categories. Awardees included renowned organisations like ONGC, Reliance Industries, HP, NTPC, Zydus, Cadila, and Aditya Birla. Each recipient was presented with a trophy and a citation for their exceptional contributions toward the SDGs.

Representing Glamac at the event were Abir Mukherjee, Managing Director, and Vinod Mishra, AGM - Sales (North & South).

Commenting on the award, Mr. Mukherjee said, "This award reflects our unwavering dedication to innovation and excellence. We are honoured by this recognition and remain committed to leveraging our technical expertise to deliver groundbreaking formulations. Glamac's sustainable formulation drive started with Panbonis– a Vitamin D3 metabolite from natural source in partnership with Herbonis, Switzerland followed by CYNKA HBR & FENVI-Natural Antidiarrheal. Our nature's blend, CYNKA HBR -Antidiarrheal & Antimicrobial is a game changer and already an award winner as "Veterinary Pharma Innovation of The Year" by The Economic Times at the beginning of 2024 which now



draws the attention of GEEF and The Department of Science & Technology, Government of India. CYNKA HBR is an outcome of extensive research and trials and addresses the challenge of antimicrobial resistance (AMR) and on a larger perspective supports the 'One Health Program' (promoted globally by FAO). CYNKA HBR is paving the way to an era of antibiotic free eggs and chicken in India and across the globe and emerges as the successful alternative of Halquinol and conventional Antibiotics (AGP) for sustainable poultry farming."

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