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Multiplication in cells 82 Oocysts 📀



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The Edit INNOVATIVE THINKING AND FRUITFUL COLLABORATION



Indian Poultry Review Annual Conclave 2024 once again reaffirmed its pivotal role in shaping the future of India's vibrant poultry industry. As a hallmark event in the poultry sector's calendar, this conclave continues to unite some of the best minds, thought leaders, and stakeholders, fostering an environment ripe for collaboration and innovative thinking. Together, they tackle the dynamic challenges and seize the myriad opportunities present in this essential industry.

This year's theme, "The Evolving Landscape of Poultry Consumption in India," was particularly pertinent given the significant demographic, economic, and cultural shifts currently underway in the country. With a population exceeding 1.4 billion and rapid urbanisation, the patterns of poultry consumption are transforming at an unprecedented pace. The conclave provided a platform for industry experts to explore the driving forces, led by a fascinating introduction by Mr. Tarun Shridhar, a dynamic keynote address by Mr. O. P. Singh and a fruitful discussion and summarisation by Prof. (Dr.) P. K. Shukla.

A key takeaway from the discussions was the rising consumer demand for poultry that is not only safe and nutritious but also sustainably produced.

Indian Poultry Review Annual Conclave 2024 served as a timely reminder of the necessity for innovation, collaboration, and strategic foresight in the poultry sector. As the industry continues to evolve, events like this play a crucial role in guiding its trajectory, ensuring that it meets the demands of a changing consumer landscape while remaining sustainable and competitive on a global scale. The discussions and insights generated at this conclave will undoubtedly pave new roads for further investment and production in the poultry sector.

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G. N. Ghosh Managing Editor

Indian Research

Study on Economics of Chicken Layers upon Dietary Supplementation of Aloe Vera (Aloe Barbadensis)

By

D. C. Yadav*, D. S. Bidhan, V. Sharma, M. I. Hashmi, N. Sisodia and Vivek Department of Livestock Production Management, Lala Lajpat Rai University of Veterinary and Animal Sciences, (LUVAS), Hisar, Haryana

Present investigation was undertaken to study the effect of aloe vera supplementation on economics in the chicken layers for a period of 20 weeks. A total of two hundred and twenty five chicken layers of twenty two weeks of age were randomly divided into five dietary treatment groups consisting of three replications having fifteen birds in each replication i.e. T_o (basal diet without antibiotics- negative control group), T (basal diet with antibiotic- control group), T_2 (1% aloe vera), T_3 (2% aloe vera) and T₄ (3% aloe vera). All diets were formulated as per BIS (2007) standards. The cost of each experimental ratio was calculated by adding the cost of various feed ingredients used. Cost per dozen of eggs during various periods were calculated using the formula. The cumulative mean values of feed cost per dozen egg productions were 44.73, 40.09, 40.90, 42.45 and 41.93 in treatment groups T_0 , T_1 , T_2 , T_3 and T_4 , respectively. The results showed that feed cost value for per dozen egg production decreased in treatment groups T₁, T₂, T₃ and T₄, respectively in comparison to T₀ group. Highest feed cost value was observed in T_o treatment group The result findings clearly indicate that 1% aloe vera supplementation in the diet of layers is cost effective and the difference as compared to control group can benullified by the added benefits of herbal egg produced in comparison to use of antibiotics in the diets.

Effect of Thyme and Turmeric Essential Oils Supplementation on Growth Performance, Nutrient Utilisation and Economics of Japanese Quails

By

S. Ranwa^{1*}, J. Palod², R. K. Sharma³ and S. Kumar⁴ ¹⁻⁴Department of Livestock Production and Management, College of Veterinary Sciences and Animal Husbandry, G.B.P.U.A.&T., Pantnagar, Uttarakhand

This experiment was aimed to study the effect of dietary thyme and turmeric essential oils supplementation on growth performance, nutrient utilisation and economics of Japanese quails. For this purpose, a total of 180, six-day-old Japanese quail chicks were randomly assigned into five different treatment groups, each with three replicates (12 birds per replicate). The experiment was conducted for 35 days. Different treatment groups of Japanese quails were designated as T_0 (Basal diet without essential oils), T_1 (Basal diet with 0.2% thyme essential oil), T_2 (Basal

diet with 0.3% turmeric essential oil. T₃ (Basal diet with 0.125% thyme + 0.075% turmeric essential oils), and T₄ (Basal diet with 0.075% thyme + 0.125% turmeric essential oils). At the end of experiment, it was found that dietary supplementation of thyme and turmeric essential oils reduced feed consumption, improved body weight, feed conversion ratio and performance index, with Japanese quails of T₄ group showed best performance during overall experimental period. The feed cost per kg weight gain was minimum in treatment T₄ over other treatment groups. Addition of thyme and turmeric essential oils in diet significantly (p <0.0'5) enhanced nutrient utilisation in Japanese quails. In conclusion, supplementing thyme and turmeric essential oils in combination at 0.075% and 0.125% of feed improved growth performance, utilisation of nutrients and reduced feed cost per kg weight gain in Japanese quails.

Evaluation of breeder Japanese Quails for fertility and hatchability under different mating ratio

By

D. Nandinee, O.P. Dinani*, A.K. Santra, D.K. Barwa, R. Pathak, R.C. Ramteke, G.K. Dutta and K. Mukherjee *College of Veterinary Science & A.H. Anjora, Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Durg, Chhattisgarh*

The present study was conducted to evaluate breeder Japanese quails for fertility and hatchability under different mating ratio. The objectives were to evaluate optimum mating ratio among different mating ratio and study their effects on fertility, hatchability, embryonic mortality, egg production, egg weight and cost economics of feeding for mass mating group of quails. The 32 males and 80 females breeder quails of 9 week of age were selected randomly from the breeder flock of same age group and body weight and are grouped in 4 different categories viz. T_1 . T_2 , T_3 and T_4 according to male-female ratio of 1:1 (8 males and 8 I females), 1:2 (8 males and 16 females), 1:3 (8 males and 24 females) and 1:4 (8 males and 32 females) respectively in mass mating system. The birds were reared into different compartments prepared as according to the number of birds on group and their space requirements in deep litter system of housing. The feed was formulated as per ICAR 2013 recommendation. The duration of experiment was for 6 weeks from 9th to 14th week of age.

The study was done under the parameters of egg production, fertility, hatchability, embryonic mortality, egg weight and cost economics of feeding. Quails with 1:4 mating ratio showed least or poor performance in terms of fertility, hatchability and embryonic mortality. In general, it was found the positive correlation between fertility, hatchability, egg production, feed intake, egg weight and feed intake with mating ratio but only up to 1:3 mating ratio after that these all parameters declined in 1:4 mating group while the negative correlation up to 1:3 mating ratio were found in feed cost per dozen of egg produced and feed cost per chick produced. Thus, it may be concluded that quails of 1:3 male-female ratio (mating/sex ratio) was found most suitable for proper fertility and hatchability, egg production, egg weight, embryonic mortality and cost of feed.

Source: XXXVII Indian Poultry Science Association Conference, November 2022





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Article

Optimising Poultry Gut Health Through High Copper Supplementation

Dr. Sanket Wakchaure Poultry Nutritionist Trouw Nutrition South Asia

Introduction

Copper is an essential trace mineral in poultry diets, vital for supporting immune function, antioxidant defence, bone strength, iron metabolism, and overall growth. Typically administered at levels ranging from 5-30 ppm, copper plays a crucial role in enhancing poultry health and productivity.

Historically recognised for its antimicrobial properties, copper has been employed in various applications, including as an antibacterial agent and water purifier. In poultry nutrition, elevated copper levels can improve gut health by influencing microbial balance in the gastrointestinal tract. This adjustment enhances feed efficiency, growth rates, and gut integrity. With potential shifts in antimicrobial use regulations and increasing demands for sustainable poultry production, optimising gut health through copper supplementation offers a promising strategy. This article examines how high copper levels can positively impact gut function and performance, aligning with evolving industry standards.

Mechanisms of Antimicrobial Action of Copper Surface (Contact Killing)

Despite the differences in copper forms, the antimicrobial activity of copper appears to be directly linked to its oxidative behaviour and the solubility properties of copper oxides. Copper can cause membrane damage through nonenzymatic oxidative damage to membrane phospholipids, resulting in the loss of membrane integrity and cell death. Additionally, copper's capacity to release ions causes oxidative stress by producing reactive oxygen species (ROS) under aerobic conditions, demonstrated by redox cycling between the different forms of copper as shown in Fig. 1.

Elevated copper levels boost beneficial bacteria while diminishing harmful strains, leading to lower levels of faecal metabolites. This reduction indicates more efficient protein and carbohydrate digestion, reflecting improved nutrient absorption.



Fig. 1: Mechanisms of antimicrobial action of copper surface (Contact killing)

Feeding High Copper Levels

Nutritional levels of copper in animal diets are designed to meet physiological needs, supporting tissue integrity, enzyme functions, immune competency, and overall performance. These levels ensure that essential trace minerals are absorbed across the intestinal wall to fulfil the bird's physiological and metabolic requirements. In contrast, feeding copper at higher levels, such as 125-250 ppm, significantly exceeds these basic requirements. This elevated supplementation creates a beneficial environment in the distal part of the intestinal tract, enhancing feed efficiency, growth rates, and gut health. By surpassing standard nutritional levels, high copper use improves bird's performance and gut integrity through better nutrient utilisation and a more robust defence against pathogens as shown in Fig. 2 and 3.

However, incorporating high copper levels into poultry diets requires careful management to avoid potential negative interactions with other minerals and vitamins. Excessive copper can disrupt the balance of essential minerals like iron and zinc, impair the retention of vitamins A, E, K, and B1, and reduce phytase efficacy, which may affect overall feed stability. To mitigate these issues, it is important to use the appropriate form of copper. While copper sulphate can lead to these adverse interactions, IntelliBond Cu from Trouw Nutrition offers a solution by minimising such effects.



Fig. 2: Gut Cu when feeding 150 ppm IntelliBond Cu (Klasing et al., 2012)



Fig. 3: Feeding Higher Cu PPMs as a Microbial Growth Inhibitor. (Klasing et al., 2012)

In another study conducted at UCDAVIS University of California, the impact of high copper on ileal microbial content was evaluated 4 hours after inoculation. The results demonstrated that IntelliBond Cu from Trouw Nutrition significantly reduced E. coli and C. perfringens counts compared to copper sulphate, as illustrated in the table 1

Copper source	E. coli	C. perfringens
0 added Cu	1.0 °	1.0°
CuSO4	0.47 b	0.88 ^b
IntelliBond C	0.31 *	0.78 °
SEM	0.02	0.03
ANOVA P value	0.001	0.017

Table 1: The impact of high copper on ileal microbial content

Recent in-vivo trials with broiler birds have shown that higher inclusion levels of Intellibond Cu improve body weight and feed intake. In contrast, these performance indicators (body weight and feed intake) are negatively affected when copper sulphate is added at higher levels. Several feeding trials with Intellibond Cu have shown that, when fed at the appropriate levels, it can mitigate the challenge of necrotic enteritis in birds.

In addition to this, hydroxy forms of copper, zinc and manganese (Intellibond Cu, Zn, Mn), when coupled with chelated forms of trace minerals, can enhance feed quality, feed efficiency, and the bioavailability of trace minerals. IntelliBond, from Trouw Nutrition, is the first line of hydroxy trace minerals for use in animal feeds that effectively meets the nutritional requirements of trace minerals and subsequently enhancing the growth and productive performance of birds.

The low solubility of IntelliBond at neutral pH results in less interaction in the feed/premix and the upper gastrointestinal tract. This means more metal is available for use by the animal where it is needed most. Further, low solubility at a higher pH avoids negative interactions in the upper digestive tract. IntelliBond is more soluble in a low pH environment and allows for a slower, more

stable release throughout the gastrointestinal tract. Solubility of different forms of copper at different pH as illustrated in Fig. 4.

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Fig. 4: Copper Solubility at a Different pH

Conclusion

Incorporating high copper levels into poultry diets offers both bacteriostatic and bactericidal effects, effectively limiting the growth of various pathogenic bacteria, including Gram-positive species such as Clostridium spp. and Gram-negative strains like E. coli and Salmonella spp. High copper levels present a promising alternative to antibiotics in antibiotic-free rearing practices. When administered in the appropriate form and dosage, copper reduces pathogenic bacteria, conserves nutrients, and enhances bird performance. IntelliBond from Trouw Nutrition has consistently demonstrated these benefits through extensive in-vitro, in-vivo, and commercial trials.

The IntelliBond technology, utilizing Hydroxy Copper as its copper source, represents the latest advancement in trace mineral nutrition, significantly improving poultry operation efficiency while meeting sustainability standards.



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Article

Criteria for Selecting a Fast Phytase-PPS

Dr. Sachin Patil DGM – Key Clients, Huvepharma SEA

What are the criteria to select a good phytase? Why select the fastest phytase? The importance of pH profile, pepsin resistance and speed (PPS) has shown to be critical to yield a fast phytase with reliable matrix values and super dosing properties.

The main reason for using an exogenous added phytase in feed is to liberate phosphorous (P), bound as phytate, in raw materials. This does not only lead to a lower feed cost by reducing the amount of added inorganic P, but also exerts a positive effect on performance by degradation of phytic acid, which is a known anti-nutritional factor in feed. In practical animal nutrition, a fast acting phytase has two major benefits. First of all, the higher the speed, the higher the P release from the phytate will be, and the less extra inorganic P needs to be added to the feed. Secondly, as phytate also exerts anti-nutritional properties linked to the binding of minerals, protein and even fatty acids, its faster destruction will thereby improve the digestibility of these nutrients and increase animal performance.

pH Profile

It is well-known that phytic acid must be in solution for the exogenous phytase to be able to hydrolyse the phosphate groups. Phytic acid is largely soluble at pH levels below 4.0 (gizzard/stomach). However, at higher pH levels (as in the small intestine), it forms complexes with positively charged ions, like calcium. A good phytase, therefore, needs to be active in vivo in the upper digestive tract, throughout the complete acid pH range from pH 2 to 4.

Pepsin Degradation

Pepsin is a protease present in the stomach/ gizzard, responsible for the degradation of proteins. As phytases are also proteins, its activity can be reduced by pepsin in the stomach area, the site at which it needs to work at its maximum. Research has shown that not all phytases are equally resistant against this degradation by pepsin, which means that the full effectivity of these phytases in the gizzard/stomach cannot be achieved, even though they might have the right pH profile.

Speed

The speed of hydrolysis of phytate by a phytase (the Vmax) is largely dependent on its pH profile and pepsin resistance and can be determined during in vitro enzymatic studies (the so called Michaelis Menten kinetic studies). In view of the short duration of feeding in the gastric region where the phytic acid is soluble and degradable, it is obvious that the Vmax of a phytase must be as high as possible and will influence the greater efficiency of phytase (Figure 1).



Scientifically Proven P Matrix Values

In order to calculate how much the addition of inorganic P to feed can be reduced by a phytase, each phytase supplier provides their specific P matrix values. The higher these matrix-values are, the more interesting the phytase becomes for a nutritionist when calculating with best cost formulation. It is, however, of the utmost importance for the nutritionist to be able to 100% rely on the correctness of these supplier's matrix values. Trials done by independent research institutes, which are published in scientific peer reviewed journals, form an adequate and solid base for determining (and comparing) matrix values. These matrix values might be referred to as the 'scientific matrix values'

and may be differentiated from the matrix values provided by the manufacturer, which we might call the 'supplier matrix value'. Such research in this scientific literature over the period 2002-2017 for poultry, for instance, have revealed that most phytase suppliers, except OptiPhos, overestimated the matrix value by up to 25%, and might thereby lead to under performance of the animals (Figure 2).



Superdosing Effects at Double Dose

Phytate is known to exert anti-nutritional aspects by binding minerals, proteins and even fatty acids, hindering their digestion and absorption by the animal. A fast working phytase like OptiPhos thereby will yield faster positive effects on improvement of performance, and will yield super dosing effects at double dose. Other phytases will need three to four times the normal dose to yield this effect.

Conclusion

It can be concluded that the intrinsic characteristics of a phytase source is determined for a large part by its in vivo activity and its speed of action. The choice of a phytase, active at all relevant pH ranges, resistant to pepsin and showing a high speed of phytic acid degradation is, therefore, of the utmost importance to secure adequate and reliable P release from phytate. The better the phytase scores at these three points, the better and more reliable its P matrix values will be and the stronger the animal performance will be enhanced through super dosing.

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Article

Poultry Processing: The Importance of Live Bird Handling



Proper live bird handling is crucial in any processing plant as it directly impacts animal welfare, product quality, and operational efficiency. In the poultry industry, maintaining the quality of birds from breeding through processing is paramount. After investing significant resources in breeding to achieve optimal bird intake, it is essential to preserve this quality all the way to the consumer. Effective live bird handling systems

play a critical role in this process by safeguarding bird welfare, enhancing product quality, and optimising operational efficiency.



Efficient and gentle live bird handling is crucial to the success of any poultry processing business. Picture Courtesy: Baader

Current Trends and Challenges in Live Bird Handling

The poultry processing industry is continuously evolving, driven by advancements in technology, changing consumer preferences, and increasing regulatory scrutiny. One of the most notable trends in poultry processing is the growing emphasis on automation to accommodate higher processing speeds and reduce labour dependence. The degree of automation varies significantly depending on the live bird handling system. Automation begins at the farm with catching devices that gently collect the birds and convey them directly to the transport equipment. In the reception area, full automation is an option, but there are also partially automated systems where only specific tasks, such as destacking, stacking, or equipment wash-down, are automated.

Another significant trend is the shift towards higher animal welfare standards, driven by the desire of both processors and consumers to adopt more humane practices. Beyond its ethical importance, humane handling offers business advantages. Transporting valuable live birds from the farm to the processing plant involves moving them from a safe environment to unfamiliar settings, making animal welfare a critical focus. The conditions during catching, transport, lairage, and processing significantly impact yield and quality, emphasising the need for careful handling throughout these stages.

This has led to the development of handling systems designed to reduce stress and injury to birds, such as low-stress transport systems and controlled atmosphere stunning (CAS).



BAADER reception systems, including Controlled Atmosphere Stunning, are easily controlled from the plant floor. Picture Courtesy: Baader

Sustainability is also a key focus, with processors seeking to reduce their environmental footprint. In the live bird handling area, this includes optimising water and energy use, minimising the transportation CO_2 emissions and optimising the use of each bird by avoiding Dead-on-Arrivals and bird injuries.

Regulatory requirements for live bird handling vary by region but generally emphasise animal welfare, food safety, and worker safety. In the United States, the USDA's Food Safety and Inspection Service (FSIS) oversees the poultry processing industry, enforcing regulations that mandate humane handling and slaughtering practices. The European Union has stringent animal welfare regulations under the European poultry welfare directive, which sets standards for the entire production chain, from transport to slaughter.

Compliance with these regulations is not optional; it is a legal obligation that can impact a processor's market access. Therefore, staying informed about current and upcoming regulatory changes is crucial for processors to ensure their handling systems meet all necessary standards.

Biosecurity is another critical concern. Effective cleaning and disinfection of transport equipment before picking up the next flock help control the spread of pathogens.

Operational Efficiency

Many operational factors must be considered when investing in a new live bird handling system. Farm conditions are decisive when choosing a system. The physical layout and infrastructure of the farm, including the size and design of poultry houses, access roads, and loading areas, will affect the choice of handling equipment. Systems need to be compatible with existing structures to facilitate smooth operation and transport. Large farms typically require systems that can efficiently handle large volumes of birds to minimise stress and handling time.

Climate and weather conditions, such as temperature, humidity, and seasonal variations, can influence the type of handling system. To avoid heat stress the handling solution must allow for sufficient airflow during transportation and lairage.



The BAADER UniLoad live bird handling equipment is designed to ensure effective airflow to all birds. Picture Courtesy: Baader

Farms with stringent biosecurity requirements will need handling systems that support effective sanitation and minimise the risk of pathogen transmission. This includes transport equipment designed for easy wash-down and efficient washing and disinfection equipment in the reception area.

Labour availability on the farm can influence whether a more automated or manual system is appropriate. Automation or fastloading systems may be more beneficial in areas with labour shortages or where skilled labour is limited.

Once the birds arrive at the slaughter plant, the reception system must effectively and gently manage the flow of birds to the shacklers, ensuring a steady feed to the slaughter line regardless of the line speed. Large drawers are particularly effective for feeding high-speed lines, as they accommodate greater volumes while maintaining gentle handling to minimise stress and injury to the birds.

Budget constraints and cost-effectiveness are crucial factors in selecting a handling system. Processors must balance the initial investment with potential long-term benefits, such as improved efficiency, fewer Dead-on-Arrivals, enhanced product quality, and reduced labour costs or dependency.

Scalability and Flexibility

As operations expand, the ability to adapt to higher processing volumes and future growth becomes increasingly important. A modular and scalable handling system enables poultry processors to upgrade throughput and cleaning time seamlessly, without significant disruptions or major equipment overhauls, provided that the reception area has adequate space. It is essential to consider future expansion possibilities when designing the plant layout to ensure long-term adaptability and efficiency.



Modular washing and disinfection equipment ensures the desired level of cleanliness. Picture Courtesy: Baader

Choosing the Right Provider

Different farm, legal, and market conditions necessitate varying handling requirements and levels of automation in poultry processing. To meet these diverse needs, BAADER offers crate handling and module/drawer solutions in a variety of modular layout options. These solutions are designed to adapt to specific operational requirements, ensuring flexibility and efficiency in handling processes.



BAADER live bird handling systems installed worldwide help poultry processors optimize their businesses. Picture Courtesy: Baader

Our live bird handling specialists provide processing audits to effectively analyse current and future challenges, helping processors design reception layouts that meet market demands. With over 80 years of proven expertise in handling live birds, we offer solutions supported by both global and local services to ensure equipment operates smoothly and efficiently.



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Article

Avian Coccidiosis: A Major Threat to the Indian Poultry Industry and Modern Solutions for Prevention





Dr. Sanjay Vikhe Product Manager-Vaccines Chief Operating Officer Stallen South Asia Pvt. Ltd

Dr. Sanjay Singhal

Introduction

The Indian poultry sector currently contributes approximately 20% to the total gross value added from the country's livestock industry. This significant contribution is fuelled by the escalating per capita net domestic income, rising per capita private final consumption expenditure and ongoing modernisation trends (Sharma et.al.2023).

Coccidiosis is one of diseases of poultry that plays an inhibitory role in the growth of poultry industry. Coccidiosis is responsible for 6-10% of all broiler mortalities and the global economic losses occur as a result of reduction in growth rate and feed conversion efficiency. It is a disease complex of poultry caused by different species of parasite Eimeria. It inflicts the birds in both clinical and sub-clinical forms. The clinical form of the disease manifests through prominent signs of mortality, morbidity, diarrhoea or bloody faeces and sub-clinical coccidiosis manifests mainly by poor weight gain and reduced efficiency of feed conversion and gives rise to highest proportion of the total economic losses. (Bera et.al.2010).

Etiology

Coccidiosis results in heavy morbidity and mortality of birds between 3 to 18 weeks of age and seven Eimeria species infecting the chicken include Eimeria acervulina, Eimeria bruneti, Eimeria maxima, Eimeria mitis, Eimeria necatrix, Eimeria praecox and Eimeria tenella. Eimeria acervulina

and E. maxima are the most prevalent species, while Eimeria tenella being the most pathogenic species (Yagub et. al. 2023).

Life Cycle

The life-cycle is short and starts with the bird ingesting sporulated oocysts. The sporulated oocysts contain four sporocysts, each containing two sporozoites and the mechanical and acidic environment in the gut result in the release of these sporocysts and sporozoites into the gut. The sporozoites invade the duodenal mucosa epithelial cells before undergoing



Fig 1: Coccidiosis life cycle

The Risk of Development of Antimicrobial Resistance with the Use of Coccidiostats in Poultry Diets Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/1-The-life-cycleof-coccidia-Eimeria-in-poultry-For-more-explanationsee-text-in_fig2_337390137 [accessed 13 Aug 2024]

phases of growth and multiplication with periodic release of merozoites into the gut. Merozoites develop within the duodenal cells as gametes, in the form of both macro- and microgametocytes. These develop into a zygote and then an oocyst which is shed in the faeces. These oocysts require moist conditions to undergo sporulation, a process that requires oxygen and takes about 24 hours, at which point they become infective (Pal et. al. 2023)

Clinical Signs

The severity of coccidian infection depends on the age of the birds, Eimeria species, number of sporulated oocvsts ingested, immune status of the bird and environmental management. Coccidiosis in chickens is characterised by dysentery, enteritis, emaciation, drooping wings, poor growth and low production, with a high rate of mortality and morbidity (Pal et. al. 2023).



Fig 2: Pathognomonic lesions.

https://en.engormix.com/poultry-industry/phytogenicspoultry-nutrition/phytogenic-approach-safeguardbirds a42871

E. tenella primarily targets the ceca, causing blood accumulation and cecal cores. E. necatrix affects the proximal and mid small intestine, leading to "salt and pepper" lesions, while E. acervulina is the most common, infecting the upper small intestine with distinctive whitish patches. E. brunetti, E. maxima, E. mitis, and E. praecox affect various parts of the intestine with varying severity, while E. hagani and E. mivati, less distinct, develop in the proximal small intestine.

Prevention and Control

Layers and breeders raised on floor litter require protective immunity against coccidiosis. Traditionally, these birds received a suboptimal dose of an anticoccidial drug during early growth, with the hope that repeated exposure to wild coccidia would naturally enhance their immunity. However, this approach has been less than fully effective due to challenges in controlling the various factors that influence coccidia reproduction

in practical settings. While anticoccidial drugs have been the preferred method for protecting these birds. The emergence of resistance in coccidiosis, is mainly due to the continuous and improper use of anticoccidial drugs in feed. Over time, this has led to drug-resistant strains of the parasite 'Eimeria' in various countries, making it harder to control the disease. Some drugs, like diclazuril and decoquinate, remain effective initially but resistance can develop with use. Crossresistance among certain drugs has also been observed, complicating treatment efforts (Usman et. al. 2011).

Vaccination programs are becoming increasingly popular. Advances in vaccine administration techniques and the selection of specific coccidia strains are making vaccination more viable, particularly in broilers. Vaccination is key in controlling coccidiosis in poultry, stimulating an immune response through B and T lymphocytes to protect against Eimeria infections. Vaccines containing oocysts from Eimeria strains which are effective in triggering comprehensive immunity.

Stallen South Asia Pvt.Ltd. is offering a unique vaccine against coccidia which is Livacox Q.

Livacox Q

Composition

It is a quadrivalent live attenuated coccidiosis vaccine for breeders and layers containing attenuated line of economically important species in breeders and layers namely Eimeria acervulina, E. maxima, E.tenella and E. necatrix.

1 dose (0.01ml) of Livacox Q provides 300-500 live sporulated oocytes of each attenuated line of E. acervuline, E. maxima and E.tenella and 100 live sporulated oocytes of attenuated line of E. necatrixin a 1% w/v aqueous solution of chloramine B.

Indication

Immunisation of commercial breeders and layers against coccidiosis caused by E. acervulina, E. maxima, E tenella and E. necatrix in domestic poultry (Gallus domesticus). Immunity develops 14 days after vaccination and remains active during the bird's whole life.

Contraindications

Do not use with food and water that contain anticoccidials, sulphonamides or any other agent having anticoccidial activity. Feed and water provided to birds 2 days before and during the first 14 days after vaccination must be free of the aforementioned substances.

Dosage

1 dose per chicken (0,01 ml)

1 ml =100 doses

Storage

Expiration

Zero days.

Precautions

- Do not freeze
- The vaccine must be stored in a dark and dry place between +2°C and +8°C.
- Temperature of vaccine during transport must be maintained within +2°C and +8°C
- Do not allow contact with freezing unit of refrigerator
- Used or partially used containers should be disposed of as per local

9 months from the date of manufacture

Vaccinate only healthy chicks kept

under good management conditions.

• Dilute the vaccines only in fresh

To generate a booster antigen, birds

must have access to litter for a

minimum of 10 days after vaccination.

Shake bottle thoroughly before opening

laws and regulations

(see Exp. Date on bottle).

Withdrawal Period

drinking water.

and mixing with water.

Keep out of reach of children

10 bottles of either size is packed in one carton

polyethylene bottle

polyethylene bottle

References

Packaging

Bera, A. K., Bhattacharya, D., Pan, D., Dhara, A., Kumar, S., & Das, S. K. (2010). Evaluation of economic losses due to coccidiosis in poultry industry in India. Agricultural Economics Research Review, 23(1), 91-96.

• The droppings of the birds serve as

a reservoir of coccidial oocysts for

automatic 'revaccination'. In the case of

any mortality, chicken carcasses sent to

diagnostic laboratory for post-mortem

must be marked 'LIVACOX vaccinated''.

10 mi (1000 doses) in a screw-capped

• 50 ml (5000 doses) in a screw-capped

Pal, M., Rebuma, T., & Tolosa, T. (2023). Avian Coccidiosis: A Major Parasitic Disease of Poultry Industry.

Sharma, R., Saran, S., & Tyagi, J. S. (2023). Indian poultry sector: Strategies for nutritional, socio-economic and environmental security.

Usman, J. G., Gadzama, U. N., Kwaghe, A. V., &Madziga, H. A. (2011). Anticoccidial resistance in poultry: A review. New York Science Journal, 4(8), 102-109.

Yaqub, M., Shah, S. A., Shafi, M., Rafiq, M., Goswami, P., Kamil, S. A.& Beigh, A. B. (2023). Pathological studies on coccidiosis in broiler and layer chicken.



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COVER

IPR Annual







🗞 INDIAN POULTRY REVIEW 20 -

Conclave 2024







Mr. Sameer Agarwal

Dr. C. R. Behl



Mr. Vikash Deo

India The joy of inventing that brings smile to our stakeholders. POULTRYREVIEW

Dr. Dibyendu Dey





a Nutreco company

ndian Poultry Review Annual Conclave 2024 was organised in Kolkata on 10th August. This was the 8th edition of this landmark poultry industry event that brought together thought leaders, policymakers and key stakeholders to explore the theme, "Evolving Landscape of Poultry Consumption in India."

The Indian poultry industry has undergone profound transformation over the years. From traditional backyard farming to the advent of large-scale commercial enterprises, the poultry sector in India has witnessed remarkable growth and innovation. This evolution is not just a testament to the resilience and adaptability of our farmers and entrepreneurs but also to the changing dietary preferences and increasing protein requirements of our burgeoning population. With its diverse culinary culture and regional variations, India presents a unique landscape for poultry consumption. Poultry is today a staple source of protein in the country and this is driven by several factors, including rising incomes, urbanisation, and increasing awareness of the nutritional benefits of poultry products.

Broadly speaking, the Conclave covered the Historical Context and Trends, Economic Drivers, Consumer Preferences and Behaviour, Food Safety and Regulatory Environment.

Tarun Shridhar, Former Secretary, Ministry of Animal Husbandry, Dairying and Fisheries, Government of India delivered the Introductory Address while O. P. Singh, Managing Director, ABTL was the Keynote Speaker. The Concluding Address was by Prof. (Dr.) P. K. Shukla, Professor and Head, Department of Poultry Science, DUVASU, Mathura.

Speakers at the Conclave were:

- Dr. C. R. Behl, Consultant Poultry Director, Allanasons Pvt. Ltd.
- Samarendra Mishra, Co-founder and CEO, OVO Farm Pvt. Ltd.
- Kinjal Shah, Senior Vice President and Co-Group Head, Corporate Ratings, ICRA Ltd.
- Deepak H, Partner and Country Head, Strategy3, Ipsos India
- Dr. Jimlee Sarmah, Joint Commissioner (ER), AQCS Kolkata, Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India

Managing Editor, Indian Poultry Review, G. N. Ghosh welcomed the delegates and speakers to Indian Poultry Review Annual Conclave 2024. He said that the delegates were not merely attendees but architects shaping the future of the Indian poultry sector. Mr. Ghosh added that the poultry industry has witnessed extraordinary growth, fueled by technological innovations, shifting consumer preferences, and an unwavering commitment to excellence. He further said that the insights and experiences of the attendees and speakers will form the foundation upon which will be built the next chapter of the shared story and he encouraged all to engage openly, challenge the status quo and cultivate new partnerships.

After Incredible India, It Is Now Incredible Egg!



n his Introductory Address, Former Secretary, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, Tarun Shridhar spoke about his eventful journey in the livestock sector including fisheries and poultry.

He delved into how analysing food habits is an interesting and challenging subject, and understanding how consumption patterns will evolve is not an easy task.

In terms of outlook to general food scenario, he emphasised feeding the global multitude is indeed a challenge, but the challenge will not be food security, because there is sufficient food for everybody on this this planet, but that the challenge will be nutritional security.

The key question Mr. Shridhar asked was how to ensure that this burgeoning population gets high quality, nutritious food and it is equitably distributed all across? At the core is the question whether today's agriculture and food systems can rise up to the challenge to meet the requirements of the population? Can we achieve the production increases without compromising on the quality of production? He feels positive about it, but whether and how this challenge will be met in an inclusive and sustainable manner is to be mapped out.

Quoting FAO reports he mentioned, as far as growth of meat including poultry is concerned, in the past couple of years it is almost stagnant, with poultry being slightly better than other meats. However, reports go to show that it is the poultry production which will guide the overall increase in meat production future even though it is marginal. There is reason for optimism as far as the poultry industry is concerned. In terms of growth in the poultry sector no country will match India, both in meat and eggs. All across the developing world, including India, poultry has emerged as the fastest growing sub-sector of the macro agricultural sector in the world. This makes it not too difficult to visualise the future of the poultry sector.

He further elaborated that the market value of poultry has been growing in an impressive manner, which means poultry as a commodity in comparison to other agricultural commodities is not only increasing in terms of absolute production, but also registering an impressive growth in productivity; the quality of products in poultry enjoys a greater degree of confidence and integrity among consumers compared to other products. Within poultry Mr. Shridhar mentioned eggs which are very important in the Indian context.

"Eggs is something the poultry sector needs to promote and eggs is an integral part of poultry consumption. International Egg Commission raised World Egg Day slogans in 2023 linking production and consumption of egg to the entire future of mankind and it's slogan 'a toast to the power of the incredible egg' could be the slogan which can take forward advocacy for consumption in a country where a sizable population is vegetarian," stressed Mr. Shridhar. He added, it is Indians who have coined the English word "Eggitarian".

He also brought attention to the Eat Right India campaign by FSSAI, which starkly shows an inherent bias against meat, fish and poultry. These silent and hidden forces are trying to change the eating habits towards a particular direction and, therefore, calls for caution. He hoped this will draw attention of the poultry industry to read into such messages.

Can You Turn from Being a Farmer to a Food Provider?



O. P. Singh opened his Keynote Address by stating, "It is encouraging to know that the poultry industry is in the right direction. India per se is in the right direction in terms of poultry sector. I am very impressed with both the industrialists of the eastern region present here. Amit Saraogi for the wonderful effort and job done with PrraniGanga and Samir Agarwal, I'm very glad for representing the farming community as the food provider of India, congratulations for your thought, your progress and acumen acquired with your own expertise."

Can you turn from being a farmer to a food provider? He urged the crowd. The day you think in the morning that you are no more a farmer but rather a food producer, your perspective of thinking and activity chart changes. If you remain a farmer you continue to strive, if you become a food producer you continue to thrive because India has 1.5 billion people to be fed. We must know, we must protect our expertise and excellence to feed them. "If we do not acquire this knowledge, acquire this expertise, we have no right to be in this business," he asserted.

Mr. Singh pointed out that ever since the disaster of COVID-19, the changes in our social fabric including the changes in the food habits has been immense. Today's 'incredible egg' was promoted as the 'ultimate protein' by Mr. Singh since 2004, but was not popularised. India produces ultimate protein amongst all protein baskets. Also as an industry or farming community, the poultry sector never learnt from the success story of the milk industry, added Mr. Singh. Today we are the largest milk producer and as a habit, we receive milk at our doorstep every morning as a convenience.

He went on to say that we, as food producers, never realised the importance of building a value chain for delivering the products at the consumers' convenience. We kept ourselves busy, hypnotised by the success of progress, always claiming internationally, nationally and administratively that we are the third or fourth largest producer of eggs. But what is per capita consumption? If we had looked at it even 10 years ago, probably today the results would have been better, he lamented.

Mr. Singh further said that he is confused - on the one hand. a big Japanese conglomerate is making greater investments in India with the focus to create the largest food consumption basket of the globe and parallelly, the largest chicken processing company in the world withdraws its business from India and returns to the U.S. Why is this? This is because, while there is an opportunity, our organisability is missing; our structure is missing; we have not been able to understand the food fabric of our own country; we are not able to cater to the requirement of the consumers which is emerging in our country. It is impossible for an industry to mature, unless our interface as a producer grows with the consumers directly. How many of the producers today have direct access to the consumers? - very few, he added. The valuation of a Japanese company became so high, because of the multiple retail counters in a single city, catering to over three lakh consumers per day. If this is the future of food, then probably we haven't addressed the biggest part of the business - which is the creation of value chain, he said.

The milk industry has already achieved this goal. Private processors are able to reach the consumers' point. Co-operative processors and the farmers are stakeholders in profit. However, in the poultry sector, this has not happened and as a result, poultry farmers live in turmoil with profits being eaten up by middlemen. The need of building a credible value chain is the need of the day for all stakeholders, exhorted Mr. Singh. He added that now is the time because from his recent interactions with international markets whether in U.S.A., European or Latin American countries, for everyone India is the hub of food consumption and production as well.

According to Mr. Singh, the food landscape is changing. Value system of food preferences are changing, nutritional requirement of food preferences are changing. If all these changes are not addressed cohesively, both backward and forward, the products will be out of context for a consumer today. The world is changing and consumers are more scientific, more aware and more calibrated in their spendings. So if this industry has to really grow and respond to the emerging food preferences, he advised producers to spend some time and money on building a product for tomorrow.

How much total expenditure do you incur against your revenue in R&D in your company? asked, Mr. Singh. This would be needed for tomorrow, he stated. Selection of products will be dependent on consumer choices, value system and preferences, only then can the industry get out of the price bracket. "You continue to remain a commodity till you do not fit into consumer choices, preferences and likings and nutritional requirements. So companies should categorically build up the merit of their products, which has to be communicated to the consumer. If the merit of the product is not rightfully known to the consumer, scientifically and perceptionally, the producer cannot demand a price. If I would have started communicating the merit of chicken and eggs, their scientific value and the nutrition goodwill it carries to the consumer and every consumer was aware of it, probably I would have fetched a better price and a better reception at their doorstep," Mr. Singh elaborated.

He further added, as per his forecast by the year 2027, 60% of the meat landscape in India will be reached through chicken as it is the most affordable source of meat. "The deliverables will improve for sure, because a lot of money is being built into the capex and infrastructure of processing. My sources tell me almost 38 processing plants will emerge by 2026-27 in India. They will go and enforce the market. But having built

this infrastructure have we designed a performance and product, a scale of production to address the international market at all? Here I call upon every association, every media house in the country to build a cohesive approach to become united as an industry and build up administrative support for ourselves. If millets can become a promotional item for the government, why not the chicken and egg?", Mr. Singh says.

He feels that in spite of being the third and fourth largest producers of eggs and chicken in the world, unfortunately we have very

insignificant presence in international trade as yet. And through his interaction with the Middle East he sees opportunities in the Middle Eastern countries for India to get, if not the whole chicken, at least the value added products, to move because the Indian expatriate population in those countries are 23-24%. All these low hanging fruits, if explored properly with an united hand, probably will see better results.

He went on to further say that no company has made any major investment is logistics of perishable goods. If the trading community does not pick up chicken from the farms, it probably gets postponed by at least three days, with this kind of handicap how do we achieve inclusive growth recommended for our industry? Only inclusive growth will spurt consumption. "Probably we also don't get attention where diseases are concerned," he added. "If a disease which emerged in 2002 was acknowledged in 2022, it took

By the year 2027, 60% of the meat landscape in India will be reached through chicken as it is the most affordable source of meat 20 years for the Government of India to acknowledge one disease, by that time the industry has lost \$2.8 billion equivalent of money," he said. He strongly feels the industry interface with accountable governmental agencies has to improve and this hand-holding will go a very long way for the industry.

Mr. Singh also raised a pertinent question to the general audience, "If there is no national biosecurity plan, whether for the hospital, human beings or farming conditions, if these issues are not resolved in the country as yet, then how can you to be concerned as AMP issue?"

blame one chicken industry to be concerned as AMR issue?"

But finally, he summed up by saying the industry has to rationalise its existence and cohesively create industry interface with research institutions who are the guiding source for the industry for future research and disease management; control input cost as much as possible; improve consumer interface, the more you know your consumer the more the industry can fill up the gap between their products and the perception requirement and the product is design-fitted as more acceptable and optimise the investments correctly, look at the value chains closely and more cohesively to make more money. So the message remains clear that the industry must have more optimised utilisation of chicken i.e. more value added options to the consumers in different forms, packaging, quality and recipes. This will mean greater margins too.

Question & Answer Session



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n his presentation titled, "Revolution of Poultry Consumption in India and Recent Trends," Dr. C.R. Behl spoke about the historical evolution of chicken, industrial evolution of chicken, key drivers of chicken consumption, current trends of chicken consumption and the desired transformation with the changing consumer trends. An interesting fact mentioned by him was that the first commercial poultry farm in India was established by a Christian missionary named Slater at Etah, UP in 1912. He traced the development of the industry from 1970 to 2016 covering the introduction of poultry breeding, opening up of policies on import of GP stocks, advent of contract broiler farming, upgradation of broiler EC housing and entry of local and global QSRs with a focus on chicken. He also spoke on the evolution of backyard poultry in the country to poultry driven by integration of feed, breed and management. Dr. Behl added that the current broiler integration model will change phase-wise to a Farm to Fork model driven by upgradation of contract growing farms and processing units to meet changing consumer preferences towards hygienic, safe, NAE, no AMR, welfare and health challenges. According to him, chicken consumption in India is bound to increase - the key for producers and retailers is to capture customers with affordable and value-based products. He gave an in-depth analysis of the Indian food processing sector, the food services market and the QSR market to indicate the continuously growing demand for chicken and chicken products. Dr. Behl said while unorganised chicken and egg selling dominated the pre COVID-19 period, the pandemic provided a much-needed fillip to online meat selling companies. Online sellers delivered a better consumer experience, changing the retail experience of meat buying and consumption. He further spoke about the challenges faced by the poultry sector and the urgent need to control AMR, the major deterrent to exports. Dr. Behl concluded by saying that though the current penetration is low, exports are a big opportunity for the poultry sector. He stressed the need to form a poultry processed food products export development authority.

Speaking on "Consumer Awareness to Food Safety in Poultry," Samarendra Mishra began by saying that the growth of the poultry industry in India is being hindered by religious sentiments and trust deficit that a section of the population have towards poultry products. He highlighted the importance of food safety and how it extends beyond regulations and technology to embody trust and responsibility. He further said that currently consumer awareness of food safety varies significantly across regions and demographies and is primarily driven by health and quality concerns. He went on to bust some myths regarding eggs e.g. eggs are non-vegetarian, all eggs are the same and practices for proper storage of eggs. According to him, consumer education and communication with consumers, both from the industry as well as government are critical for the industry. Mr. Mishra added that it is important for egg and chicken producers to concentrate on value additions as a route to increasing revenues. He further said that food safety starts with the feed that has been fed to the chickens. This also has an impact on exports. Food safety components would, therefore, include raw material sourcing, production practices and processing & packaging. He concluded by saying that lack of engagement with consumers is a big issue plaguing the poultry sector; it is critical for the industry to reach out to the consumers in its efforts to increase consumption of chicken and eggs.

Kinjal Shah addressed the gathering on "Key Trends and Growth Drivers for the Poultry Industry." She began by stating that the Indian poultry industry is dominated by organised players – over 70% of the poultry output is produced by organised, commercial farms. Sales of eggs and chicken, however, happens largely through wet markets. This is somewhat the result of lack of insfrastructure like cold chain etc. opined Ms. Shah. The retailining of poultry is majorly unorganised. She pointed out that the processed and value-added component of the market is quite small currently. She commented on the volatility in the input raw material costs, particularly maize and how this is adversely affecting the production cost causing the industry to undergo losses. With an expectedly good kharif crop, the maize prices are likely to stabilise, said Ms. Shah. She added that soybean prices have somewhat stabilised which augurs well for the industry. Also, the industry has started experimenting with alternatives. Speaking on broiler price realisations, Ms. Shah said that though FY 2024 started with negative broiler realisations, this improved till November 2023 and then again declined sharply. Overall FY 2024 ended with a 3% positive broiler realisation, said Ms. Shah. Q1 FY 2025 looks better, she added, commenting further that FY 2025 should show a positive realisation for broilers. As far a long-term growth drivers are concerned, Ms. Shah said that the primary driver is the low per capita consumption of both chicken and eggs as compared to globally laid down standards. Also, the awareness of the need for consumption of good quality protein post COVID-19 coupled with the low cost of chicken and eggs is an added growth driver. A further growth driver, according to her, is the home delivery of chicken and eggs through e-commerce channels. Finally, the changing lifestyle of people including eating-out habits is driving growth for the poultry sector, added Ms. Shah. She also ennumerated the key opptunities and challenges for the poultry sector. Among the opportunities, she spoke about are the wide gap in per capita consumption in India vs. globally; improved infrastructure by poultry producers resulting in improved cost efficiencies; increased demand for value-added products; encouraging export potential. As far as challenges are concered, Ms. Shah mentioned about volatile feed costs and broiler realisations; limited shelf life of poultry meat; limited control on input and output prices make profit margins volatile; bird flu remains a persistent threat. Ms. Shah outlined ICRA's outlook for the poultry sector based on a sample of several leading poultry companies. The key takeaways from Ms. Shah's presentation are - a) industry revenues in FY 2024 were supported by stable demand and marginal realisations. Steady demand growth and gradual revival in realisations would lead to an improvement in industry revenue growth to 8-10% in FY 2025 post a moderate growth of 7-8% in FY 2024 b) despite volatility throughout the year, the broiler realisations witnessed a YoY growth of around 3% in FY 2024. In the first two months of the current fiscal, the broiler realisations are higher by more than 25% YoY c) likely softening in the maize price with new crop arrival along with declining soybean prices are estimated to keep feed costs stable in the current fiscal d) organised players are incurring capex towards setting up processing plants to grow revenues from value-added products apart from improving backward integration d) there have been localised instances of bird flu which impacted demand and realisations in the affected region. Any large outbreak could impact demand levels

Deepak H's presentation was titled, "Consumer Preferences and Behaviour in Context of the Evolving Landscape pf Poultry Consumption in India." He began with a quote from Steve Jobs – "Get closer than ever to your customers. So close, in fact, that you tell them what the need well before they realise it themselves." This indicates that it is important to keep a finger on the pulse of the consumer and to know what is happening in the consumer mind. These are consumer trends and crucially important for business to keep in perspective to ensure success. He gave real-life examples of various organisations that have either succeeded or failed because of this. Mr. Deepak spoke about 12 trends, identified by Ipsos Strategy3, that impact societies, markets and people. He highlighted and elaborated on 3 of these trends which are likely to impact businesses over the long term – Conscientious Health, Authenticity is King and The Enduring Appeal of Nostalgia. Mr. Deepak went on to talk about the effects of global trends on meat consumption and commented that due to its positive attributes, chickens are taking over the planet! He also said that trends are showing that globally, veganism is not growing the way it was being predicted to grow. He suggested bringing back and reusing the popular NECC jingle, "Sunday Ho Ya Monday, Roz Khao Ande." According to him, nostalgia as a communication trend is growing.

Dr. Jimlee Sarmah's presentation on "Regulatory Environment for Poultry Sector in India," was broadly divided into three sections – for poultry farms, for foods of animal origin and for trade of animals, foods and farm inputs. She said that as poultry is considered one of the most polluting sectors, clearance

is required from CPCB and NGT for setting up farms of more than 5000 birds. Animal feed is regulated under BIS and import, manufacture, distribution and sale of drugs including antibiotics are regulated under the provision of the Drugs and Cosmetics Act 1940, she added. Dr. Sarmah listed out the various relevant acts promulgated by the Department of Animal Husbandry and Dairying (DAHD) governing all aspects of the poultry sector. She explained broadly the guidelines and regulations to be followed for exports of poultry and allied products. She further spoke about the special provisions of compartmentalisation initiated in the country according to WOAH rules for making zones and areas disease free and hence to aid exports. Dr. Sarmah also elaborated on the emerging scenarios - Animal Health System Support for One Health, Animal Pandemic Preparedness Initiative. She also enumerated the challenges and solutions



for the proper implementation of the regulatory framework. She concluded by providing an overview of the functions of Animal Quarantine & Certification Services.

The full recording of Indian Poultry Review Annual Conclave 2024 is available on YouTube. Scan the QR code to watch.





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Article

Rice Distiller's Dried Grains with Soluble (rDDGS): Current Perspective and Nutritional Profile

Dr. Sudhir Kale¹, Dr. Sushant Labh¹, Dr. Dilip L. Waghmare² ¹Kemin Industries South Asia Pvt. Ltd. ²Japfa Comfeed India Pvt. Ltd.

Introduction

In poultry nutrition, searching for alternative feed ingredients is a continuous process in pursuing economical poultry production. Feed is the major constituent in poultry production accounting for 65-75% of total production cost. The cost of protein sources primarily drives feed costs. One of the ways to reduce cost is the substitution of expensive protein sources with lower-cost ingredients. Therefore, efforts are being made to reduce the cost of production by employing alternative feed ingredients in the broiler chicken ration¹.

Distiller's dried grains with solubles (DDGS) are by-products of the ethanol industry produced by dry milling. Corn, wheat, sorghum, barley, and rice can be used for ethanol production, which can be used as an alternative plant protein source. The nonfermentable components of the grains which are rich in nutrients like protein, fat, fiber, vitamins, and minerals are recovered in a highly concentrated form as DDGS. Its inclusion in poultry has many advantages including wide availability, adequate protein level, and complementary amino acid profile².

DDGS contains microbial phytase, which improves phosphorus bioavailability. It also contains yeast biomass (6%) which helps in building the immune system stimulation and gut development⁴. DDGS has a beneficial effect on the environment, as it mitigates the harmful emissions and pollution from manure and provides a clean atmosphere. However, the use of DDGS in poultry has limitations because of variations in its characteristics (physical, chemical, and nutritional) and digestibility among the sources⁵. The nutrient composition of DDGS varies depending upon the source of grains, the method and machinery used for ethanol production, and the rate of condensed distillers' soluble (CDS) addition. The DDGS types available in India are rice, bajara, barley, corn, wheat, and sorghum DDGS. Among all Rice DDGS is predominant and available in more quantity⁴.

Physical Characteristics

Physical characteristics vary among the sources and impact their feed value and inclusion level in the diet. Physical character includes color, smell, particle size, bulk density, flowability, pH, shelf-life stability, and hygroscopicity.

Colour

The colour of DDGS can vary from light yellow to dark brown. The colour difference is influenced by the colour of source grains, and the rate of soluble addition (time and temperature). When the relatively high portion of CDS is added to make DDGS, the colour becomes darker^{5,6,8}

Fig. 1: Different colors of Rice DDGS^o Smell

Fresh Rice DDGS smells sweet and fermented where a charred and smoky smell is an indicator of poor quality or overheated material⁶.

Particle Size

The particle size of good quality RDDGS should be uniform in distribution and should allow easy and good mixing with other raw materials used in feed manufacturing⁶.

Moisture and pH

Moisture content is the deciding factor of storage stability of RDDGS. Maximum content should be within 12% where there is a high chance of more mycotoxin and rancidity development. The pH of RDDGS is 4.1, the lower the pH, the lower the chance of bacterial contamination⁶.

Chemical Composition

DDGS is very low in starch but higher in non-starch polysaccharides (NSP) content as compared to their parent grains used. DDGS is higher in gross energy than parent grain. DDGS contains all the nutrients from grain in a concentrated form and the majority of starch has been utilised in the fermentation process during ethanol production. This will concentrate all nutrients about three-fold present in the cereal since two-thirds to three fourth portion of cereal content is starch. The nutrient composition of Rice DDGS (RDDGS) varies depending on the source of grain and the methods of RDDGS production.

From 01st Jan 2024 to 30th June 2204, we analyzed 94 samples from different suppliers and different regions. Herewith, we have given average values for different regions. (Data given in two different Tables, 1 – Proximate analysis, Table 2 Amino acids analysis, Table 3 Amino acid data in different studies)

a) Crude Protein

Various studies reported a crude protein content between 44% to 45% in RDDGS. A high crude protein content of 61.41% in RDDGS was reported and a low crude protein content of 28.55% in RDDGS was also observed^{5,6}. This variation is mainly due

to variations in the chemical composition of raw material used, differences in fermentation efficiency, and processing techniques. Thus nutritionists need to characterise the composition of these nutrients of RDDGS by a standardised protocol before formulating balanced diets for poultry. Although measuring the color score of DDGS may provide a rapid indication of the general quality of DDGS, it has to be exercised with caution as it is not a precise estimation of the nutrient content.

b) Crude Fiber and Ether Extract

The range of crude fiber was 1.23 to 5 and ether extract content was 3.19 to 7.67%. A crude fiber content (4.89 to 10.85%) and ether extract (2.24 to 8.90%) were also reported in some studies^{2.6}.

	No. of		Av	erage Proxima	ate Values (%)	
Region	Samples	Fat	Moisture	Protein	Ash	Fiber	Sand & Silica
East		2.54	10.51	46.63	4.46	2.98	0.74
Range	18	1.59 - 4.23	8.63 - 12.89	44.85 - 47.73	3.25 - 7.23	1.30 - 3.85	0.30 - 1.79
West	26	2.20	9.86	44.37	4.70	3.58	0.88
Range		1.35 - 3.29	7.93 - 11.98	42.18 - 46.82	3.28 - 6.29	2.37 - 4.47	0.45 - 1.18
North	31	2.19	10.32	44.32	3.95	3.50	0.35
Range		1.45 - 4.40	9.49 - 12.95	38.09 - 47.96	3.18 - 5.59	1.89 - 4.00	0.19 - 0.75
South	19	3.26	9.76	44.53	4.87	3.27	0.94
Range		1.99 - 6.63	8.00 - 12.37	41.42 - 47.14	3.62 - 5.84	1.69 - 4.89	0.39 - 2.27

Table 1 Proximate analysis of different Rice DDGS samples from different regions of India (1st Jan 2024 to 30th June 2024)⁹

c) Energy

The ME(Metabolisable Energy) levels in RDDGS vary from 2200 kcal/kg to 2400 kcal.kg⁶.

Mineral Composition

Rice DDGS can be a good source of P (0.76%), Zn (57.26 ppm), K (0.91 ppm), and other minerals. The level of these minerals varies based on various factors but similarly, their bioavailability is also linked with the source, the ethanol production process. So level of all these minerals needs to be analysed and quantified before considering into feed formulation to avoid the effect on birds performance. Also, total Sulphur content needs to be confirmed as during ethanol production addition of sulphuric acid is done to maintain the pH. Sulphur levels in poultry above 0.6% produce wet litter and 1.2% Sulphur produces ill health effect^{2.6}.

Amino Acid Composition of RDDGS

RDDGS contains all the nutrients from grain in a concentrated form and the majority of starch has been utilised in the fermentation process during ethanol production. The amino acid profile of RDDGS showed lower lysine (0.64 – 1.23%) content than soya bean meal (2.99 – 3.22%) and the other amino acids were well within the range. This phenomenon may be due to variations in the amino acid composition of the parent grains used for ethanol production, compared with soya protein amino acid profile². The variation in the nutrient content is related to the drying process, uneven mixing of CDS during the drying process which will result in a change in nutrient variability in DDGS, and due to high temperature, which may reduce the protein quality⁷.

Amino Acids (%)	Luu et al., (2000)	Xue et al., (2012	Gupta (2016)	Kucheriya (2019)	Yang et al., (2019)
Arginine	1.42	1.47	3.06	2.63	1.45
Histidine	-	1.01	1.04	1.07	0.63
Isoleucine	1.12	0.93	1.89	1.62	1.38
Leucine	2.02	2.94	3.6	3.64	2.49
Lysine	0.99	0.64	1.23	1.19	1.27
Methionine	0.52	0.61	1.19	1.03	0.66
Phenylalanine	1.35	1.28	2.32	2.07	0.98
Threonine	1.24	0.92	1.67	1.43	1.23
Tryptophan	-	0.24	-	-	-
Valine	1.53	1.39	2.64	2.27	1.71
Alanine	1.81	1.84	2.56	2.24	1.8
Aspartic acid	2.26	1.94	3.91	3.31	2.75
Cysteine	0.61	0.62	0.98	0.88	0.44
Glutamic acid	4.52	4.08	7.48	6.65	4.77
Glycine	1.23	1.1	1.92	1.72	1.46
Proline	1.22	1.86	2.1	2.17	1.66
Serine	1.21	1.34	2.2	1.95	1.44
Tyrosine	-	1.08	-	1.08	0.65
Crude protein	23.1	28.55	45	43.75	-

Table 3: Amino acid profile of RDDGS analysed in different study²

Other Nutrient of Rice DDGS

There is very few data available in the literature about the content of Rice DDGS, but data available on DDGS can be considered as a reference for the same⁵.

DDGS is a good source of riboflavin and thiamine and most of the riboflavin in DDGS comes from the soluble fraction. DDGS also contain some biologically active substances such as nucleotides, mannan oligosaccharides, β -1, 3 or 1, 6 glucan, inositol, glutamine, and nucleic acids, which have a beneficial effect on immune responses and the health of animals.

Corn grain contains about 20 ppm of xanthophylls and it is expected that corn DDGS may be a good source of xanthophylls (lutein and zeaxanthin) pigment, due to their concentration of the pigment during the production process. However, the actual xanthophyll content may be lower in DDGS because of heat destruction during drying.

Mycotoxin in Rice DDGS

Generally, the risk of mycotoxin contamination of DDGS is very low because of the implemented surveillance system at various points from the farm through ethanol plants to animal feed^{2,5}. Many ethanol plants routinely monitor incoming corn and reject contaminated deliveries. However, to secure the rapidly growing biofuel industry and efficient utilization of its by-products multiple strategies have been implemented to control the quality of DDGS. Rotation of corn with other crops, proper handling, and storage of rice, constant monitoring of moisture and temperature as well as insect control are the basic methods employed in mycotoxin control. Moreover, the production of genetically engineered rice varieties that are directly resistant to various diseases and mycotoxins, as well as transgenic insect-resistant corn that is indirectly less susceptible to insect damage and consequently mycotoxin accumulation, has been well advanced. Despite all the risk factors associated with DDGS, mycotoxin is

	Average Total Values (%)										
MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
1.14	0.92	2.02	1.51	1.67	0.55	3.12	1.87	3.55	2.60	1.01	2.31
1.09 - 1.21	0.87 - 1.01	1.90 - 2.14	1.37 - 1.75	1.55 - 1.85	0.51 - 0.62	2.85 - 3.44	1.75 - 2.05	3.30 - 3.91	2.44 - 2.80	0.91 - 1.10	2.15 - 2.52
1.10	0.94	1.99	1.52	1.66	0.56	3.05	1.86	3.59	2.57	1.02	2.31
0.95 - 1.21	0.83 - 1.06	1.79 - 2.18	1.27 - 1.77	1.48 - 1.83	0.49 - 0.62	2.68 - 3.46	1.66 - 2.06	3.16 - 4.17	2.30 - 2.86	0.88 - 1.80	2.05 - 2.55
1.12	0.89	1.96	1.43	1.62	0.54	2.95	1.83	3.47	2.54	0.96	2.28

Table 2: Amino acid analysis of different Rice DDGS samples from various regions of India (1st Jan 2024 to 30th June 2024)⁹

on top, as all starch undergoes fermentation during the ethanol production process hence mycotoxin content goes 3 to 4 fold. Major mycotoxins in parent rice include Aflatoxin, Ochratoxin, T2, and Fumonosin^{5,6.} Along with the mycotoxin, Malathion (up to 50 ppb) was also found in some of the DDGS samples (Table 4 summarises mycotoxin analysed in samples collected from a different region of India, from 1st Jan 2024 to 30th June 2024).

Aflatoxin B1	Fumonisins	Ochratoxin	T2 Toxin	Zerolene	DON
90	30	250	200	10	400

Table 4: Avg toxin values for all analysed samples⁸.

Production Statistics, Industry Sscenario, and Composition of Corn vs Rice DDGS

Data on Production statistics, industry scenario, and composition of Corn vs Rice DDGS is given in Tables 5, 6, and 7

Ethanol Production and Blending Trends- Year-Wise					
Supply Year	Quantity Supplied (In Crore Liters)	Blending %			
2013-14	38	1.53			
2014-15	67.4	2.33			
2015-16	111.4	3.51			
2016-17	66.5	2.07			
2017-18	150.5	4.22			
2018-19	188.6	5			
2019-20	173	5			
2020-21	332	8.5			
2021-22	437	10			
2022-23	542	12			
2023-24	698	15			
2024-25	988	18			
2025-26	1013	20			

Table 5: Ethanol Production and Blending Trends- Year-Wise⁷

Starch Content and Ethanol Yield of Various Feedstocks				
Feedstock	Starch (%)	Ethanol Yield (L/MT)		
Sugarcane		654		
Barley	67.1	399		
Broken rice	80.1	500		
Corn	71.8	262		
Oats	44.7	26.2		
Wheat	63.8	375		

Table 6: Starch content and ethanol yield of various feedstocks7

Comparison of Common Bio-fuel Co-products					
Parameters	R -D	DGS	C-DI	DGS	
	Mean	Range	Mean%	Range	
Crude protein (%)	45.88	38.46 - 53.61	28.5	24.01 - 34.93	
Crude fiber (%)	3.38	1.14 - 6.74	9.15	6.88 -11.41	
Ether extract (%)	4.36	1.47 - 5.69	7.36	2.75 - 10.98	
Total ash (%)	4.6	1.11 - 9.24	3.84	3.25 - 4.43	
Calcium (%)	0.25	0.10 - 0.70	-	-	
Phosphorus (%)	0.68	0.46 - 1.34	-	-	

Table 7: Comparison of common bio-fuel co-products7

Optimisation of Feed Cost by Rice DDGS Inclusion

Soya DOC has more lysine and low methionine whereas Rice DDGS contains more methionine and low lysine. So, both are complementary to each other when used with all caution. The current price of Rice DDGS varies from 15 to 20 Vs the price of soya DOC 45 vs 49. So, considering the per unit of nutrient cost in Rice DDGS, it is a very good alternative, without compromising quality^{6.5}.

Steps to follow while formulating Rice DDGS in feed formulation 1. Storage Condition

- a. Storage of rice DDGS mainly depends upon the initial level of moisture, season and storage area, and type of packaging material
 2. Physical Examination
- a. Physical parameters like pH, moisture, and mycotoxin level need to be considered.
- 3. Proximate Analysis
- a. Detailed analysis of parameters like crude protein, crude fiber, moisture, ether extract, and amino acid need to be done before formulating a diet.
- 4. Maximum inclusion level in feed
 - a. Maximum inclusion level of Rice DDGS is dependent upon factors

like age of birds, daily feed consumption, breed, season, inclusion level of other raw material and price, environmental factor, and disease scenario in the area. In addition to this maximum inclusion level depends on diet density, age, and breed of birds. In the case of a low-density diet, inclusion should not go toa higher level because of variations in nutritional composition. DDGS can be used safely up to 6-8% broiler and layer diet.

5. Target Organ Protection

- a. Considering overall risk and threat factor protection against target organs like liver, kidney, bursa, and gut health needs to be considered. Sufficient levels of biotin, choline, and methyl donors need to be considered for liver health. To maintain immune status good quality toxin binder with multi-toxin binding and pesticide binding potency should be used in feed formulation.
- b. To have complete gut health protection probiotics having activity against Clostridium spp., Salmonella spp., and E. coli species are needed.
- c. Considering variations in nutrient profile like crude protein, amino acid level and digestibility, ME content, and bioavailability of P, the use of a combination enzyme is the best strategy to tackle economic and nutritional variation challenges.
- d. Enzyme solution having xylanase, amylase, beta gluconase, cellouse, amylase, and multiprotease should be used. The use of a combination of enzymes not only helps to reduce the cost but also helps to mitigate the risk of anti-nutritional factors. It also helps to release extra sugar by breaking other NSP components like beta-glucan, mannan, and oligosaccharides³.

Risks of Using 'Static' Published Databases

The nutrient composition of feed ingredients changes over time. Therefore, relying on "static" published book values from old, published databases can lead to significant overor underestimation of actual energy and nutrient content of commonly used feed ingredients. This is even more critical for DDGS because the nutrient composition continues to change as ethanol plants adopt new processes to improve ethanol yield, extract more corn oil, and enhance protein and amino acid content. Therefore, when determining appropriate and accurate nutritional values for DDGS, it is important to consider the dates of publications and current actual data to compile these databases because the nutrient composition began changing when the ethanol industry objective, need, and process changed⁷.

Summary

Biofuel co-products are cheaper, lowering the cost of feed for animals and reducing potential threats to the environment. The Government of India has announced an ethanol blending program of up to 20% in petroleum. In this regard, a greater number of distillers will produce ethanol from sugarcane, maize, rice, sorghum, and wheat. Amino acid level and digestibility, metabolizable energy content, and bioavailability of Phosphorus (P) are the predominant factors that affect the suitability of DDGS in feed formulation. Variations in the manufacturing of ethanol production, quality of parent grain, and other associated factors need to be taken into consideration. Maximum inclusion of DDGS in feed formulation solely depends on raw material quality and nutritionist knowledge about risk factors. Rice DDGS has many advantages like better feed intake and Feed Conversation Ratio. It has a good impact on egg, and meat quality due to high omege 3-fatty acid. It improves the phosphorous bioavailability and therefore, less phosphorous excretion prevents environmental pollution.

The DDGS usage comes with potential constraints of sulphur toxicity. In the ethanol production process, sulphuric acid is used and ethanol by-products may be high in sulfate, which hamper the oxidative processes in nerve tissue, along with that risk of mycotoxin can be expected always. *(References available upon request)*

Article

White Chick Syndrome: An Emerging Poultry Disease

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Introduction

White chick syndrome is a relatively new phenomenon in the poultry industry. Economically it is an important disease as it is causing loss of hatching egg production in broiler breeders.

The progeny from the first flock was unusually pale, hence the condition was termed "White Chick" and the syndrome is called White Chick Syndrome (WCS).

WCS cases are identified by the presence of typical chicks in the hatchery that are generally weak with pale to white down, enlarged abdomens, and occasionally brown wiry fluff on the dorsum of the neck.

Hatchery diseases occur when eggs become infected by pathogens, often leading to drops in the numbers of eggs laid, reduced hatches and/or embryonic defects such as dwarfing. True vertical transmission occurs when the pathogen is passed from a parent into the egg while pseudo or apparent vertical transmission arises from contaminated faeces on the eggshell, allowing pathogens to penetrate the egg, impacting embryonic development. There are several pathogens known to be passed to the developing embryo from parent birds, including Salmonella pullorum and S. gallinarum, certain mycoplasma species, avian leucosis virus, avian encephalomyelitis virus (AEV), fowl adenovirus and chicken astrovirus (CAstV) resulting in high levels of chick mortality and impairment in chicks after hatching.

Synonyms

- White Chick Disease
- White Chick Hatchery Disease

Cause

White Chick Syndrome is associated with a chicken astrovirus (CAstV).

Astroviruses (CAstV) are small, round, non-enveloped RNA viruses, and are relatively common in the poultry production environment. Non-enveloped viruses are relatively resistant to a wide range of chemical and physical agents.

Astroviruses have been associated with gastroenteritis in many different species. They have also been seen in conjunction with avian nephritis (ANV) and poult enteritis and mortality syndrome (PEMS), among others.

Occurrence

White chick hatchery disease is a recently emerged disease affecting broiler chicks and embryos that has been reported in a number of regions worldwide.

Hatchery diseases occur when eggs become infected by pathogens, often leading to drops in the numbers of eggs laid, reduced hatches and/or embryonic defects such as dwarfing. True vertical transmission occurs when the pathogen is passed from a parent into the egg while pseudo or apparent vertical transmission arises from contaminated faeces on the eggshell, allowing pathogens to penetrate the egg, impacting embryonic development.

Fig 1

It occurs as non-clinical disease in broiler breeder flocks. The majority of infection is affected in their peak of production and are in an age range between 28 and 40 weeks old. Some of the flocks show a slight drop in production (from 4 to 10%). It is the progeny of breeder flocks exposed to astrovirus that manifest the clinical signs of white chick syndrome.

There will be drop in hatching of fertile eggs (between 7 and 40%). Many of the chicks that hatched were small with characteristic white plumage (Figure 1).

Transmission

- Horizontal transmission of the virus, most commonly via the faecal-oral route
- The virus is excreted in the faeces, which can also contaminate the water systems of poultry houses, and is consumed by non-infected birds
- Transmitted by vertical transmission as CAstV was detected in dead embryos and at high levels in just-hatched chicks

Clinical Symptoms

Typically, there are no clinical signs of infection in laying breeder flocks, other

than a possible transient egg drop of about 3-15%. The adult hens typically became infected between 30 to 40 weeks of age and the first indication is decrease in hatchability and an increase in deadin- shell embryos; in some of the flocks increases in mid- and late-term embryonic deaths and poor hatchability. When breeder flocks get infected, two to three weeks later, they show the infection in chicks characterised by increase in dead -in-shells, runted, weak chicks with pale down that do not survive for long after hatching. Some flocks were reported to cause less mortality, with a decrease in hatchability up to 5%.

Post-mortem Evaluation

The post-mortem of the affected chicks reveal appearance of green and mottled liver with bile stains, sometimes even presenting a mosaic-shaped necrosis pattern (Figure 2). In some cases enlarged spleens, kidneys and pancreases and the presence of gelatinous oedemas around the head and neck of the chicks.

Microscopic observations in late dead embryos included clumps of granulocytes in liver tissue as well as areas of necrotic tissue containing inflamed blood vessels, resulting in vasculitis and enlarged bile ducts.

Fig 2: Post-mortem examination of white chicks showed enlarged, Greenish mottled liver

Diagnosis

- Typical appearance of chicks with white plumage, weak and runted
- Post-mortem lesion of greenish liver
- Detection of CAstV RNA in embryos that were found dead-in-shell by quantitative, real-time RT-PCR tests and in affected chicks thathatched with

high CAstV viral loads

 The genome of CAstV, including those strains that cause white chick hatchery disease

The lack of yellow pigmentation in the chicks' feathers is possibly due to viral interference resulting in the reduced transfer of carotenoids that are circulating in the mother into the egg, or more probably, the presence of CAstV in the egg preventing embryonic absorption of carotenoids from the yolk.

Histopathology: observations included hypertrophic bile ducts, inflammation of the heart and granulocytes in the bursa of Fabricius, kidney, liver tissue and heart of chicks with white chick hatchery disease

Differential Diagnosis

Use of specific molecular assays for:

- Adenoviral infections
- Salmonella infections
- Mycoplasmal infections
- Pale bird syndrome: commonly caused by mycotoxins
- Malabsorption syndrome
- Infectious bronchitis, avian nephritis virus, infectious Laryngotracheitis virus, avian influenza virus, Newcastle disease virus,

Prevention

Currently, there are no commercial vaccines available for this virus: therefore, only control methods for white chick hatchery disease include attempts to reduce the occurrence of CAstV infections by developing and maintaining good flock biosecurity. High levels of biosecurity may leave breeder flocks susceptible to subclinical infections by these pathogenic strains of CAstV during lay if they have not developed specific immunity during rearing period.

Conclusion

White chick hatchery disease is an emerging disease of broiler chicks with which the virus, chicken astrovirus, has been associated. Adult birds typically show no obvious clinical signs of infection, although some broiler breeder flocks have experienced slight egg drops. Substantial decreases in hatching are experienced over a two-week period, with an increase in mid-to-late embryo deaths, chicks too weak to hatch and pale, runted chicks with high mortality. Chicken astrovirus is an enteric virus, and strains are typically transmitted horizontally within flocks via the faecal-oral route; however, dead-inshell embryos and weak, pale hatchlings indicate vertical transmission of the strains associated with white chick hatchery disease. As there is no vaccine, high biosecurity measures are required in its control.

Reference:

1. A Review of the Emerging White Chick Hatchery Disease. Available from: https://www. researchgate.net/publication/356849774_A_ Review_of_the_Emerging_White_Chick_Hatchery_ Disease.

2. Kerry McIlwaine, Christopher J. Law, Ken Lemon, Irene R. Grant, and Victoria J. Smyth,(2021) A Review of the Emerging White Chick Hatchery Disease.Viruses. 2021 Dec; 13(12): 2435.

3. Long K.E., Hastie G.M., Ojkić D., Brash M.L. Economic impacts of white chick syndrome in Ontario, Canada. Avian Dis. 2017;61:402-408. doi: 10.1637/11592-012217-CaseR. [PubMed] [CrossRef] [Google Scholar]

4. Sajewicz-Krukowska J., Pać K., Lisowska A., Pikuta A., Minta Z., Króliczewska B., Domańska-Blicharz K. Astrovirus-induced "white chicks" condition—Field observation, virus detection and preliminary characterization. Avian Pathol. 2016;45:2-12. doi: 10.1080/03079457. 2015.1114173. [PubMed] [CrossRef] [Google Scholar]

5. Monroe S.S., Jiang B., Stine S.E., Koopmans M., Glass R.I. Subgenomic RNA sequence of human astrovirus supports classification of astroviridae as a new family of RNA viruses. J. Virol. 1993;67:3611–3614. doi: 10.1128/ jvi.67.6.3611-3614.1993. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

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Article

Food Feudalism and Fundamentalism: Formidable Foes of Livestock

SHRIDHAR speaks

Tarun Shridhar Former Secretary, Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India

A social media post by a journalist containing a picture of school children being served boiled eggs in the mid-day meal has sparked an intense debate; after all the journalist also poses as a social reformer and is seeking opinion upon the desirability of offering eggs to children in schools as a part of the mid-day meal programme. While the supporters of the humble egg are muted in its advocacy, the expression of outrage at this move is combative. Let us pause this subject for a moment.

Mankind is boastful, justifiably so, of the tremendous progress it has made and continues to make. While thumping our chests in celebration, should we ignore some of the fundamental flaws and inequities in this growth? One such matter of grave concern is malnutrition which, even amidst a world of plenty, remains a persistent global issue; and worryingly for us all, the problem is on a rise. It manifests in many different forms, including hunger, micronutrient deficiencies and, ironically, over-nutrition resulting in overweight and obesity. It has emerged as the single largest contributor to disease in the world, affecting one in three people, and responsible for 22 percent of premature deaths among adults worldwide.

Against this background, isn't it disturbing that rather than deliberate upon assured access of nutritious food for all, precious time and resources are getting committed to establishing superiority of one food over another. Food has become a symbol of asserting cultural superiority and to shame the ones who have dietary habits different from your own.

The egg in mid-day meal debate does have proponents expounding its nutritious value and importance for the growing children, however the contrarian views come out rather strongly. The underlying arguments are that it is ethically and morally wrong to serve a non-vegetarian dish to children. No one has cared to outline the ethical and moral principles the egg violates. And how an unfertilised egg qualifies as a nonvegetarian item remains unexplained. It was in the year 1942 that Mahatma Gandhi, in a monograph titled Key to Health, explained, "Eggs are regarded by the layman as a flesh food. In reality, they are not...A sterile egg never evolves into a chick. Therefore, he who can take milk should have no objection to take sterile eggs."

One comment, by a respected and reputed citizen, is rather curious; and worrying too since it garners some passionate allies. Egg being a "tamsik" food has no place in a school which is a "temple of education", the gentleman proclaims. The quality of education amidst crumbling infrastructure that our government schools offer is the least of the concerns. The word tamsik is derived from the sanskrit word tamas, meaning darkness; and tamsik food pushes its consumers to darkness and ignorance, so the argument expands. Outrageous the justification undoubtedly is, its egregiousness gets somewhat diluted

discussion, mentioned that consumption of meat and eggs leads not only to hormonal imbalance but also to genetic distortion. Any guesses regarding the portfolio assigned to this minister? Well, it was fisheries, animal husbandry and dairying. Another union minister of state, who was deputed to preside over the World Egg Day function, in a reverse of the tradition, was insistent that no publicity of his participation in the programme be given. His anxiety stemmed from the insecurity of losing the vote and support of the sizeable vegetarian population in his parliamentary constituency.

when I recall the statement of a union

minister of state who, during an official

The detractors of egg should take note that 'Eggs for a Healthy Future' was the theme of the last World Egg Day as a recognition of the "nutritional power of the incredible egg and its potential to combat common nutrient deficiencies across the world." Michael Ruhlman, a homegrown chef and celebrated author eloquently articulates, "The greatest of all our foods, the egg combines beauty, elegance, and simplicity, a miracle of natural design and, as food, bounty."

Nutritionists term egg as a "reference protein" i.e. a standard to measure other proteins. This has to do with its high biological value and digestibility. Its biological value i.e. the proportion of protein ingested and absorbed into the body, is 93.7%. This is the highest for any food after milk whey protein. The egg's high protein efficiency ratio is buttressed by its low calorie count. A 55-gram hard boiled egg contains about 77 calories, while packing all the essential amino acids; Vitamin A, B2 and B12 too.

Subtle and fairly widespread voices either opposing outrightly or gently dissuading people from consuming animal food products are finding expression in diverse fora. Ideological beliefs, passion and sentiment dictate these voices rather than science and rationale. The Food Safety and Standards Authority of India (FSSAI) has recently launched a campaign called Eat Right India. The mandate of FSSAI is to ensure safety and quality of food sold in the market, and to this objective it sets standards of hygiene and nutrition and enforces these standards through the Food Safety and Standards Act. FSSAI has expanded its mandate to advise the citizens, through a campaign mode, to eat "right". "Right" food in the campaign is not what adheres to the standards but particular items of food which, according to FSSAI, people should be consuming and also in what quantities. What is this advice? "Cereals & Pulses: consume in adequate quantity; Fruits & Vegetables: consume liberally; Milk & Milk Products: consume plenty; Food & Drink High in Fat or Sugar: consume sparingly; Meat, Fish & Poultry: consume moderately. Whereas the wisdom of this advice may not be questioned; isn't a stark bias against livestock products, except for milk, visible. Equating non-dairy livestock food with potentially unhealthy foods high in fat and sugar appears an attempt to nudge the people towards particular food choices? Is an artificial feudal food hierarchy getting created?

Subtle and fairly widespread voices either opposing outrightly or gently dissuading people from consuming animal food products are finding expression in diverse fora

As it is there are interest and pressure groups aplenty giving our livestock and its products a bad name. Climate change to Antimicrobial Resistance (AMR) to animal rights; blame for all ills plaguing us are put on the shoulders of the livestock

sector sans any credible data or scientific validation. The sector stakeholders are quiet or at best muffled in their expression to set the facts right. Now, on the one hand, we face a subtle strategy to veer people away from meat, fish and poultry; and the author and implementer of this campaign is the highest statutory authority responsible for food safety and quality; and on the other, through social media, a crude blatant attempt at indoctrination hostile to any livestock product other than milk. It won't be surprising that even in the case of milk, anyone consuming milk that does not contain A2 protein may be castigated. After all, the FSSAI did retrace within two days its order, a correct one, directing dairy companies not to misguide

the consumer by touting the virtues of A2 milk over others as it is yet to be scientifically proven. Interestingly, half of the milk we produce is buffalo milk which is the most authentic A2 one. There is a deafening silence on the buffalo.

The sector and its keepers would be well advised to recognise these emerging threats to its growth; the misinformation and negative propaganda are now becoming toxic. With one voice the sector needs to aggressively proclaim the immense nutritional benefits of animal source foods, and livestock as an engine of economic growth. The food and nutritional security of the future, and millions of livelihoods are at stake.

IPR Espresso

China Returns As One of Top Poultry Export Destinations

End of ban on U.S. poultry, plus the popularity of chicken feet, drives industry's growth in China. Ten years ago, China was the fourth-largest destination for U.S.-produced poultry products, accounting for \$315 million in export value, according to data from the Foreign Agriculture Service.

However, China-bound poultry exports plummeted in 2015 after the nation banned U.S. chicken following an avian influenza (bird flu) outbreak.

By 2019, poultry exports to China accounted for just \$10 million, a fraction of the \$4.25 billion in total chicken exports. But the ban was lifted later that year, and over the last four years China has become the second-largest customer of U.S. poultry.

INTERNATIONAL

The sale of chicken feet, considered a delicacy in some Asian countries, is driving most of the growth in China. In 2022, chicken feet accounted for 85% of poultry exports into China, according to the Poultry and Egg Export Council.

Another influenza outbreak last year led to China banning poultry imports from some states, which could limit growth. Overall, China is the destination for nearly 20% of all U.S. agriculture exports, according to the organization Farmers for Free Trade.

Outside of China and Taiwan, Cuba, Guatemala and the Philippines have experienced the largest growth in poultry exports over the last decade. Total poultry exports in 2023 were \$5.49 billion.

Central Government Committed to Facilitating Egg Exports

Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, Government of India, has assured poultry producers and egg exporters in the region that the Union government would not oppose Tamil Nadu's claim as a disease free export zone.

After visiting poultry farms in the districts of Tamil Nadu and holding discussions with animal husbandry officials, poultry farmers and egg exporters, she confirmed that the Government was committed to facilitate egg exports.

Dr. P. V. Senthil, Secretary, Livestock and Agri Farmers Trade Association, had earlier urged Ms. Upadhaya to officially recognise Tamil Nadu as a bird flu and other disease free state, as there was not any such outbreak in the state till date.

He had also urged the Centre to do away with the compartmentalisation. Ms. Upadhay, however, said compartmentalisation was the requirement from certain egg importing nations and the Government had nothing to do with the same.

Namakkal poultry farmers and egg exporters also pitched for a laboratory in the district for the surveillance and diagnosis of poultry diseases. "Now we are relying on multiple laboratory tests and certification for export activities. The situation will change if an advanced lab comes up in the district", they said.

In reply, Ms. Upadhaya said it would cost at least Rs. 10 crore to set up such a laboratory and promised that she would take up the matter with the centre for financial support.

The meeting was attended by the district Collector S. Uma, Rajya Sabha M.P. K.R.N. Rajesh Kumar, and state Animal Husbandry Director,Maheswari Ravikumar.

Telangana Chief Minister's Positive Response Encourages Poultry Industry

A high-level delegation from the poultry industry, led by Uday

NATIONAL

Singh Bayas, President of the Indian Poultry Equipment Manufacturers' Association (IPEMA), met with the Hon'ble Chief Minister of Telangana, Revanth Reddy, to extend an invitation for the inauguration of the 16th Edition of Poultry India, scheduled to be held between 26th and 29th November 2024.

The meeting lasted for 30 minutes approximately, during which the delegation presented the concerns and aspirations of the poultry fraternity to the Chief Minister.

According to Uday Singh Bayas, the Chief Minister was very receptive and expressed a positive outlook toward the growth and development of the poultry sector in Telangana. He assured the delegation of his full cooperation and support for the industry's initiatives. "We are grateful to the Hon'ble Chief Minister for taking the time to meet with us and for his commitment to our industry. His positive response and assurance of support are greatly encouraging as we prepare for the upcoming Poultry India event," said Mr. Bayas.

The delegation included prominent figures such as :

- Dr. Ranjit Reddy, Poultry India EAC Member
- Dr. K.G. Anand, General Manager Venkateshwara Hatcheries Limited
- Raghava Rao Telangana Poultry Breeders Association President
- Mohan Reddy (TPF), President Telangana Poultry Federation
- Vuppala Narasimha Reddy (TPF), General Secretary Telangana Poultry Federation
- Gurram Chandra Shekar Reddy Zonal Chairman NECC HYD
- Chakradhar Rao Director Poultry India and M. Srikanth -Treasurer (IPEMA)

Recognised as South Asia's largest poultry exhibition, this event is expected to bring together over 400 exhibitors and more than 1,500 Knowledge Day delegates from over 50 countries. The expo serves as a vital platform for industry pro-fessionals to connect, discover the latest advancements in poultry management, health, and nutrition, and explore new business opportunities.

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Event

Aviagen's Leaders' Summit

Aviagen India hosted key industry leaders at Chiang Mai, Thailand, from 21st to 23rd August for its Annual Leadership Summit. This exclusive event brought together leading Indian poultry producers to foster collaboration, exchange insights, and explore emerging trends and opportunities in the poultry sector.

Dr. Ramakrishna Balasubramanian, Aviagen India's Business Manager, warmly welcomed attendees, followed by Dr. Peter Fisher, President of Aviagen Asia, who delivered an insightful overview of the poultry market in India and across the broader Asian region.

The summit included a series of thought-provoking presentations from prominent industry experts, such as:

- Jose Martin Xavier, Regional General Manager for Marel, who shared cutting-edge innovations in poultry production and the latest market trends
- Bhupinder Singh, CEO of Vista Processed Foods (OSI Group), who shared insights into new opportunities in valueadded food products and their potential influence on the Indian market
- Dr. Peter Chrystal, Senior Poultry Nutritionist for Aviagen Asia Pacific, who provided strategies on maximising profitability

through optimised feed costs while enhancing bird health, welfare, and efficiency

In his closing remarks, Ferry Monné, Marketing Manager for Aviagen India, expressed sincere gratitude to the participants, underscoring the importance of such collaborative events in advancing the industry's progress.

Reflecting on the event, Dr. Balasubramanian remarked, "The high level of engagement and quality discussions at the summit highlight our commitment to empowering our customers with the knowledge and tools they need to thrive in a rapidly evolving market. We are dedicated to supporting their growth and ensuring they are well-prepared to meet future challenges and opportunities."

Dr. Fisher added, "India's poultry production has seen tremendous growth in recent decades, largely due to the hard work and innovation of our customers. Their dedication to delivering a sustainable, affordable, and nutritious protein source to Indian families is truly inspiring. In the spirit of 'Breeding Success Together,' this summit provided an invaluable platform for exchanging ideas and insights that will shape the future of India's poultry industry."

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AUGEN

Event

RESCOM Summit 2024 - A Resounding Success

Huvepharma successfully hosted RESCOM 2024, a vibrant twoday conference at Hua Hin, Thailand, on 14th and 15th August. This event brought together the foremost leaders of the animal health industry, including veterinary professionals and technocrats from the poultry sector.

The conference featured a diverse range of technical sessions led by renowned industry experts, focusing on the latest trends, technologies, and best practices. These sessions equipped attendees with vital knowledge to navigate the ever-evolving landscape of animal health, ensuring they remain at the forefront of industry advancements.

Participants were also given the unique opportunity to network with top-tier experts, exchanging insights on leveraging skills and technical knowledge for the sustainable growth and advancement of the animal health sector.

The event began with a keynote speech by O. P. Singh, Managing Director, Huvepharma SEA. His opening remarks addressed the growing challenges, including the economic

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impact of emerging diseases on the Indian poultry industry, and emphasised the importance of veterinary professionals in spearheading sectoral growth.

Throughout the conference, participants engaged in thoughtful discussions on a variety of topics, ranging from complex disease management and food safety to the environmental responsibilities

of poultry producers. The sessions provided invaluable perspectives on tackling emerging challenges in poultry health and production, allowing attendees to gain expert insights directly from the field's top minds.

The conference was a resounding success, filled with enriching sessions and meaningful dialogue that will undoubtedly shape the future of the poultry industry. By the end of the event, participants left feeling energised, inspired, and ready to push the boundaries of innovation within their respective fields.

The closing ceremony featured final remarks by Mr. Singh, who reiterated the essential role that veterinarians play in driving technological advancement and innovation in the poultry sector. He

emphasised that veterinarians are not only leaders of change but also guardians of industry progress, advocating for continuous improvement and collaboration.

In appreciation of their participation, attendees were presented with certificates as part of the closing ceremony, marking the successful conclusion of the conference.

Event

USSEC and KPFBA Sign MoU

he U.S. Soybean Export Council (USSEC)'s Soy Excellence Center (SEC) India recently signed a Memorandum of Understanding (MoU) with the Karnataka Poultry Farmers and Breeders Association (KPFBA) to enhance workforce training and capacity building within India's rapidly expanding poultry industry.

Jim Sutter, CEO of USSEC, emphasised the importance of collaboration saying, "The foundation of our success with USSEC's Soy Excellence Centers is in collaborating with industry experts "I am confident that this MoU between USSEC and KPFBA will open new avenues of innovation, progress and productivity for India's poultry industry."

Aligned with Prime Minister Narendra Modi's 'Skills India' initiative, this partnership aims to provide young protein professionals

in India with opportunities for career advancement, access to a global curriculum, and preparation for the future, all while promoting sustainable production. With 68% of India's population in the 15-64 age group, the potential to leverage the country's economic dividend is significant. This MoU will serve as a foundation for continuous learning, knowledge sharing, and driving the economic growth of the poultry sector. The partnership is dedicated to advancing the industry through upskilling, skills training, and community learning.

Naveen Pasuparthy, President of KPFBA, commented on the MoU, stating, "This MoU enables KPFBA to offer access to digital online training programs delivered by global experts reaching every nook and corner of India's poultry and feed milling sector. These programs and the delivery mechanism will help in workforce training, upskilling and capacity-building, for India's rapidly growing poultry and feed milling sector. KPFBA also gets the opportunity to share, design and curate new programs with USSEC that can be delivered seamlessly on such a digital platform. It's a pleasure for KPFBA to collaborate with USSEC on such initiatives."

As part of the MoU, USSEC's SEC program will provide training to KPFBA members via SEC's digital platform, with participants gaining access to SEC's global community, SEC Pods, for networking and learning. KPFBA members will also have the opportunity to attend in-person SEC courses. KPFBA, in return, will promote SEC's training programs among its members, ensure continuous engagement, and track progress. The association will also provide access to facilities and subject matter experts for collaborative training of mutual interest.

Since its launch earlier this year, SEC India has established the Regional Advisory Council (RAC), a panel of 14 experts offering guidance on course content and industry insights. SEC India is gaining momentum, having already trained over 600 professionals across its feed milling, poultry, and soy foods tracks. These efforts underscore SEC's role in driving innovation and contributing to a more food-secure India.

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Event

Change of Guard at CLFMA

CLFMA of India recently announced its new Managing Committee for the term 2024-26. Divya Kumar Gulati, Managing Director, Nurture Technology took over as the new Chairman. With over 30 years' experience in healthcare, nutrition and the food industry, Mr. Gulati is well poised to lead CLFMA into its next chapter. He has been actively involved with CLFMA for over 12 years and has been Deputy Chairman. His participation and expertise in navigating government relations, especially with the Ministry Fisheries, Animal Husbandry, and Dairying has been instrumental in shaping policies that benefit the livestock industry.

The outgoing Chairman, Suresh Deora, Director of S.A. Pharmachem Pvt. Ltd.,

CLFM	CLFMA Leadership Team 2024-26			
Chairman	Divya Kumar Gulati, Nurture Aqua Technology Pvt. Ltd.			
Deputy Chairman	Sumit Sureka, Shivshakti Agro (India) Pvt. Ltd			
Deputy Chairman	Naveen Pasuparthy, Nanda Feeds Pvt. Ltd.			
Deputy Chairman	Abhay Parnekar, Godrej Tyson Foods Ltd.			
Deputy Chairman	Abhay Shah, Spectoms Engineering Pvt. Ltd.			
Honorary Secretary	Nissar F. Mohammed, Coastal Exports Corporation			
Treasurer	R. Ramkutty, Niswin Enterprises			
Immediate Past Chairman	Suresh Deora, S.A. Pharmachem Pvt. Ltd.			

has been an instrumental force in CLFMA's recent success. Under his stewardship, CLFMA has grown in stature, building

stronger government engagement and hosting numerous impactful seminars.

Other members of the Managing Committee 2024-26	
Rajneesh KR Jha	Anmol Feeds Pvt. Ltd.
Balaram Bhattacharya	Avitech Nutrition Pvt. Ltd.
Vijay D. Bhandare	Bhavani Agrovet Pvt. Ltd.
Dr. Prashant Shinde	Cargill India Pvt. Ltd.
Dr. Saikat Saha	Evonik India Pvt. Ltd.
Capt. (Dr.) A. Y. Rajendra	Godrej Agrovet Ltd.
Anushrav Gulati	Herbs & Health Biotech Pvt. Ltd.
Dr. Devender Hooda	Huvepharma SEA (Pune) Pvt. Ltd
Dr. Vijay Makhija	Intervet India Pvt. Ltd.
K A Sujit	Chandan Komarla Feeds & Foods Pvt. Ltd.
Anil M.	KSE Limited
R. Lakshmanan	Shanthi Feeds Pvt. Ltd.
Jaison John	U. S. Soybean Export Council, Inc.

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Feature

Exploring U.S. Soybean Industry and Sustainability Practices

In a landmark initiative, the U.S. Soybean Export Council (USSEC) hosted a trade team from South Asia, including delegates from India, Nepal, Sri Lanka, Pakistan, and Bangladesh, as well as participants from Nigeria in Sub-Saharan Africa. The delegation embarked on an in-depth exploration of the U.S. soybean industry.

The week-long tour provided delegates with first hand insights

through discussions with industry leaders, farm visits in Missouri and Illinois, and participation in the Global U.S. Soy Summit, "Soy Connext," in San Francisco, California.

Kevin Roepke, USSEC's Regional Director for South Asia & Sub-Saharan Africa, kicked off the tour with an engaging presentation outlining the delegation's itinerary. The program included visits to soybean farms, grain elevator facilities in Missouri and Illinois, and an exploration of river lock dam facilities.

At the Cargill Grain Elevator Facility in St. Louis, Plant Manager April Sloan provided an in-depth tour, showcasing technological innovations in grain storage and export operations. This visit highlighted the scale and efficiency that make U.S. soybeans a dominant force in global markets.

The delegation also visited the Donald Danforth Plant Science Center in Missouri, where over 400 scientists are dedicated to improving global nutrition through crop innovation. Development Officer Mike Manson guided the team through the center, introducing pioneering research aimed at addressing global food security challenges.

In Illinois, Jerry and Scott Gaffner, third-generation farmers at Gaffner Family Farm, demonstrated sustainable soybean and corn farming practices, emphasising mechanisation and environmental stewardship. The visit to Riddell Farm in Sparland, Illinois, continued this theme, with fourth-generation farmer Jay Riddell showcasing advanced farming methods that prioritise sustainability.

The Global U.S. Soy Summit "Soy Connext" in San Francisco gathered over 800 international buyers and sellers from 62 countries. The summit underscored the U.S. soybean industry's strengths, with U.S. farmers projected to produce 4.6 billion bushels of soybeans for the 2024/25 crop, marking an 11% increase from the previous year.

A significant focus of the summit was sustainability, with the Sustainable U.S. Soy (SUSS) label, backed by the U.S. Soy Sustainability Assurance Protocol (SSAP), gaining considerable attention. Rosalind Leeck, USSEC Executive Director, highlighted the growing demand for the SUSS label, which is now featured on over 1,000 products globally.

USSEC Chair Lance Rezac emphasised the importance of events like "Soy Connext" for showcasing U.S. Soy's premium quality and sustainability, while Jim Sutter, CEO of USSEC, underscored the role of collaboration and data-driven insights in advancing sustainable agricultural practices.

The tour also fostered significant international partnerships. During the event, Naveen Pasuparthy, President of the Karnataka Poultry Breeders and Farmers Association (KPBFA), signed a landmark Memorandum of Understanding (MoU) with USSEC to promote the Soy Excellence Center (SEC) program in Karnataka State. This initiative is vital for preparing the next generation of experts in the poultry industry.

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Jaison John, Team Lead - India at USSEC, elaborated on the vital role U.S. Soy can play in enhancing food security for India's vast population amidst inflationary pressures. "Ensuring nutritional security for India's population of 1.4 billion is a significant challenge, but U.S. Soy can be a vital partner in this effort," he said. "With its high-quality protein and versatile food applications, U.S. Soy can enhance food security, support sustainable agriculture, empower local communities, and foster economic growth."

Dr. Vijay Anand, Center Lead - India, Soy Excellence Center, highlighted the SEC's alignment with India's "Skills India" program. Launched in January 2024, SEC in India has already introduced specialised courses in poultry, feed-milling, and soy foods, marking significant progress in industry skill development. Dr. Vijay emphasised that India's large animal husbandry and soy foods sectors require significant workforce training, and SEC's globally sourced expertise is helping prepare young professionals for the challenges and opportunities in these sectors.

The U.S. tour and Global Soy Summit "Soy Connext" have highlighted the U.S. soybean industry's dedication to sustainability and innovation. The experiences and insights gained will significantly impact efforts to promote U.S. soy in South Asia and beyond.

As a member of the South Asia delegation and a Regional Advisory Council Member of the Soy Excellence Center, this tour deepened my understanding of the U.S. soybean industry's commitment to sustainability, innovation, and global nutrition.

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Announcement

Gartech Clinches Milestone Deal

Gartech Equipment Pvt. Ltd., a leading poultry equipment manufacturer recently secured a significant order from IB Group. The order involves the supply of equipment for IB Group's state-ofthe art, fully automated, \$65 million (over Rs. 500 crore) multi-tier broiler breeder project for 2.5 million birds. The project is to be commissioned over the next nine months.

Helmed by Bahadur Ali, IB Group is among Asia's top five poultry companies with grandparent operations and is known for its commitment to quality and growth. Under Harish Garware's stewardship, Gartech is India's largest manufacturer of hi-tech automated poultry farm equipment, specialising in vertical farming systems for poultry with automated feeding, drinking, lighting, and climate control.

Commenting on the association with IB Group, Mr Harish Garware said, "This order strengthens our long-standing partnership with IB Group and reaffirms Gartech as India's leading provider of advanced poultry equipment. Together, we're driving innovation and elevating global farming standards to meet the growing demands for protein security. We are committed to delivering this order with the precision and quality that define Gartech, as we continue our mission to transform the poultry farming industry."

Gartech is known for large scale turnkey projects in the poultry sector. One of its recent major achievements was setting up the largest poultry farm in the Philippines for San Miguel Corporation.

Dr. Amit Patra Appointed to PVS Group

Dr. Amit Kumar Patra recently joined PVS Group as Business Head (Poultry & Veterinary).

An M.V.Sc. in Animal Nutrition from West Bengal University of Animal & Fishery Sciences, Dr. Patra has also completed his Post Graduate Degree in Marketing Management. He has over two decades experience in the poultry and dairy industries and has demonstrated proactive leadership in sales & marketing initiatives, market development, customer relations and strategic planning.

Commenting on the appointment, Dr. Pamulapati V.S., CMD of PVS Group

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said, "Under leadership of Dr. Amit , PVS Group is poised to further consolidate our position as market leader in animal health and nutrition. I am confident Dr. Amit will add value to both our organisation and industry."

Expressing his enthusiasm Dr. Amit said "I am delighted to join PVS Group and look forward to working closely with our talented team and valued partners. I am confident of adding value to our team and company to reach our goal to become leader in the industry. "

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