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THE MAGAZINE OF INDIAN POULTRY INDUSTRY | MAY 2024

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ARTICLE

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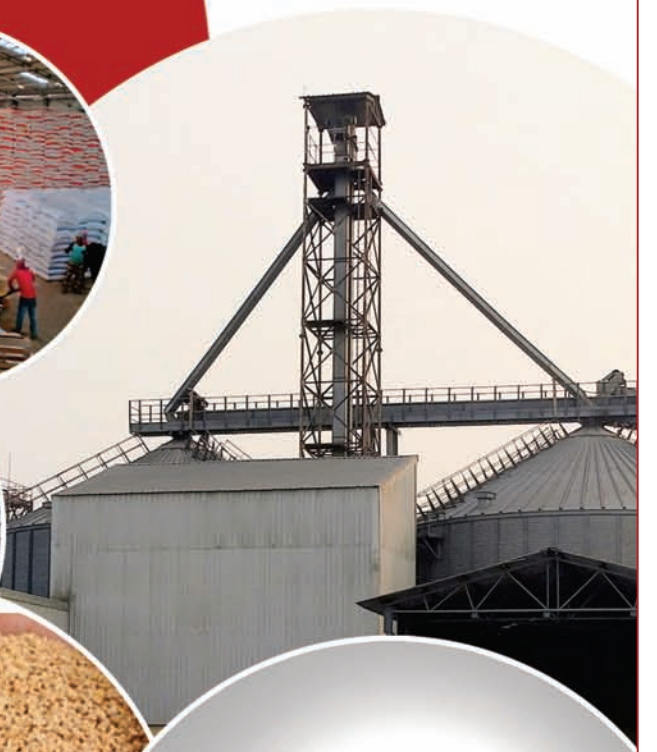

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The Edit

RISING DEMAND FOR VETERINARY PROFESSIONALS

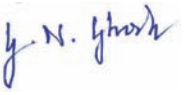
India's animal agriculture sector, a crucial pillar of the country's agrarian economy, is experiencing robust growth. As the demand for foods of animal origin continues to surge, the need for qualified veterinary professionals is more pressing than ever. Students with BVSc and MVSc degrees are uniquely positioned to capitalise on this expanding market with diverse and promising career prospects.

The rapidly expanding poultry sector is seeing a huge demand for the specialised skills of veterinary graduates. With the increasing consumer demand for poultry products, veterinarians are needed to oversee health management, biosecurity measures, and disease control programmes. This ensures not only the health and welfare of the birds but also the safety and quality of the products reaching consumers.

The livestock and fisheries sectors are also witnessing a spurt in growth and activities. The role of veterinary graduates is indispensable in driving sustainable practices and maximising the economic potential of these sectors.

Beyond traditional roles, veterinary graduates are finding opportunities in research, pharmaceuticals, and biotechnology. The development of new vaccines, new treatments, and health supplements opens avenues in both the private and public sectors. Additionally, government agencies and NGOs frequently seek veterinary professionals to contribute to public health initiatives, animal welfare programmes, and rural development projects.

In conclusion, the career prospects for veterinary graduates in India's animal agriculture sector are not only diverse but also deeply rewarding. As the sector continues to grow, so too will the demand for skilled veterinary professionals who can contribute to its advancement. For those passionate about animal health and agriculture, this is a field ripe with opportunity and promise.



G. N. Ghosh
Managing Editor

Effect of Dietary Supplementation of Inorganic and Nano Chromium Particles on Blood Biochemical Attributes and Immunity of Breeder Coloured Chicken

By
P. R. Jadhav[1]*, A. Bhattacharya[2], P. K. Shukla[3], H. Raghav[4] and A. Bansod[5]
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Trace minerals are being routinely added to poultry diets for optimising production and improving the immune status of poultry. Thus, in perspective to this study was performed to evaluate the effect of dietary supplementation of inorganic and nano chromium particles on blood biochemical attributes and immunity of breeder coloured chicken (Chabro). Birds were randomly distributed into three treatment groups having three replicates of 10 hens and 2 cock each of uniform age, production and in good health condition. Tl-basal diet, T2- Tl+inorganic chromium chloride @ 0.5 mg/kg, T3-Tl+CrNPs @ 0.5 mg/kg. It was observed that non-significance difference found in total protein, albumin, creatinine, uric acid. AST, ALT and ALP however reduced level of triglyceride and total cholesterol in Nano chromium supplemented group. Response to 1% SRBC (log2titre) and cell mediated immune response to PHA-P were comparatively better in T3 than other groups.

Thus, it may be inferred that supplementation of chromium revealed no adverse effect on blood biochemical attributes and resulted betterhumoral and cell mediated immune responses in coloured chicken.

Effect of Supplementation of Mixture of Moringa Oleifera Leaf and Arjuna Bark Powder on the Productive Performance of Uttara Chicken

By
A. Sharma[1]*, A. Kumar[2] and K. Nayal[3]
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Alternatives are needed due to the public health risks of subtherapeutic antibiotic use in chicken feed. Moringa oleifera is a phytobiotic with antibacterial and immunomodulatory effects. Terminalia arjunain Ayurvedic medication is used as a heart tonic to keep the heart healthy, blood pressure normal and cholesterol levels low. The goal of the study was to see how Moringa oleifera leaf and Arjuna (Terminalia arjuna) bark powder administration affected the productive performance of Uttara fowl. Day old chick (n= 108) were distributed into six treatment groups, having three replicates of 6 birds each. The study was conducted from day old to 32 weeks of age. Chicks were fed T0 (control) basal diet and 5 treatment groups as T1, T2, T3, T4, T5 supplemented with 1, 2, 3, 4, 5% Moringa oleifera leaf powder respectively and 1% Arjuna bark powder in each group respectively. The age at first egg laying in T3 was found to be less (164 ± 0.58 day) as compared to control (169 ± 0.57 day) groups.No significant difference in average weekly feed consumption. The average egg production in supplemented group was significantly ($P<0.05$) higher than control group from 25-32 wk. of age. Average weekly feed conversion ratio per egg mass basis was significantly ($P<0.05$) better in T3 group than control group from 25-32 wk. of age.

Thus, it may be concluded that dietary supplementation of mixture of Moringa oleifera leaf @3% and Arjuna bark powder @1% resulted in better growth and productive performance of Uttara fowl.

Effect of Dried Peppermint (Mentha Pepperita) Leaves Powder, Probiotic and Their Combinations on Performance of Dual Type Colour Hens During Late Phase Production

By
R. Gholve[1], S. S. Atkare[2], L. Chouhan[3], G. Goyal[4], S. K. Joshi[5] and A. Shinde*[6]
1, 2, 3, 4, 6 Department of Poultry Science, 5 Department of Animal Genetics & Breeding, College of VeterinaryScience & A.H., NDVSU, Jabalpur M.P.

Dual type Jabalpur color hens were studied to assess the effect of dried peppermint leaves powder (DPLP) and probiotics on certain production traits. Birds were maintained in individual cages of two tier cage housing system and reared under identical condition of housing, feeding and management. One hundred eight birds from these populations were randomly taken at 60 week of age and housed in separate row of the same house. Birds were allotted in 9 dietary treatment groups, each group having 12 birds in two replicates. Ration prepared with 17 % protein and 2800 kcal ME/kg of diet and equally divided into 3 parts by weight. Dried peppermint (Mentha pepperita) leaves powder @ Og (Po), 10 g (P1) and 15 g (P2) per kg of diet was added in ration and mixed thoroughly. Then each of these rations was further supplemented with 3 levels of probiotic containing Saccharomyces ceriviacaei. e. 0 g (Bo), 10 g (B,) and 15 g (B:) @ of per 100 kg of diet. Thus 9 dietary treatments were prepared. Daily measured quantity of feed was offered in each treatment group and residual feed was measured at the end of each week to determine feed consumption. Egg production, egg weight, egg mass and feed efficiency per kg egg mass in 12 week period (84 days) and egg quality traits were measured from each treatment group. It was concluded that DPLP significantly improved egg production, feed efficiency/kg egg mass, egg shell thickness and haugh unit score whereas probiotic favored shell thickness.

Source: XXXVII Indian Poultry Science Association Conference, November 2022

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Article

Innovations that Revolutionise Animal Nutrition

Dr. Shiva Kumar
Director Technical
Trouw Nutrition South Asia

Feed formulation and production technology is gaining in importance due to the number of future global opportunities, challenges, and threats. The global demand for animal sourced food is expected to increase by 70% in 2050 due to growth of the world population, increased income, and urbanisation (Alexandratos and Bruinsma, 2012; Boland et al., 2013). The world-wide demand for animal feed is expected to increase to 1500 Mton in 2050 with the major growth occurring in Asia and Africa. In addition, animal welfare, environmental pollution minimisation, use of novel ingredients, and the use of ingredients unsuitable for human consumption in relation to efficiency of production, are major challenges faced by the feed industry (Babinszkyet al., 2019).

These challenges are leading to demands for innovation in several areas related to animal nutrition including feed technology.

Innovation involves embracing cutting-edge science from all disciplines, generating insights, increasing collaboration with end users and other partners, turning products into solutions, and accelerating progress through science-based solutions.

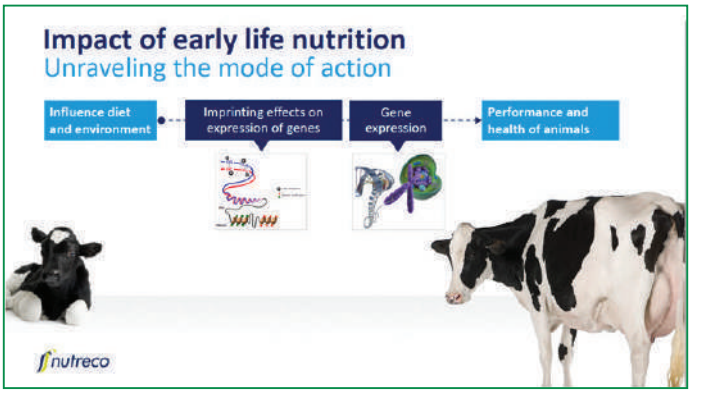
Innovation focus areas in animal nutrition can be broadly classified into the following categories:

- **Early Life Nutrition**
  - Young animal vitality and later life performance
  - Specific hatchery and nursery nutrition
- **Health & Welfare**
  - Supporting intestinal health
  - Nutritional solutions for transition periods
  - Nutritional solutions for specific challenges
- **Feed Efficiency**
  - Feed additives for production efficiency
  - Reducing emissions
  - High performance feeds for Maximum growth and feed efficiency potential
- **Application Solutions**
  - Precision feeding
  - Recommendations for feed and feeding
  - Models for quantitative nutrition and feed performance
  - Optimised feed value and predictable performance

Early Life Nutrition

Diet and environment are known to influence performance and health of animals with several empirical evidence. The right nutrition at the right time to both young born and maternal animals, especially during gestation, lactation and weaning, can have profound effects on the overall lifetime performance of the animal.

Diets can have an imprinting effect on expression of genes and



done with epigenetics (The study of changes in gene activity that do not involve alterations to the genetic code but still get passed down to at least one successive generation) is at forefront.

Health & Welfare

Animal nutrition is an important part of the solution to help to contain Antimicrobial Resistance (AMR). The feed sector plays a critical role in supporting animals' optimal health with high resilience capabilities to stressors through safe and high-quality feed (feed formulation and processing) and access to nutritional innovation. It, therefore, is a key factor in the well-being of all livestock, fish, and companion animals.

Adequate animal nutrition (well-balanced and well-formulated feed) combined with good hygiene practices on farms and proper housing are key in promoting animal health and welfare. A balanced diet of compound feed supported by specialty feed ingredients/additives meets the animal's physiological requirements and maintains the balance of the gut flora. Gut health is in fact a key factor in keeping animals healthy and resilient to stressors, such as heat or pathogens.

The health and welfare problems caused by poor digestibility of proteins include wet litter in poultry resulting in breast blister and hock burn, whilst a high concentration of ammonia resulting from the decomposition of N-rich compounds in the excreta can cause serious respiratory problems in both pigs and poultry (Elling-Staats et al. 2021; Gilbert et al. 2018). Furthermore, poor quality or digestibility of proteins often acts as a predisposing factor for necrotic enteritis in meat chickens (Palliyeguru et al. 2009; Wu et al. 2014).

Animal feed must contain proteins that supply amino acids for body tissue growth, reproduction, and components of key metabolites. Proteins come from a variety of sources, mainly plant and animal origin (including insects), although proteins produced from single cell organisms such as microorganisms and algae specifically grown for feed use are becoming increasingly common.

The protein digestibility value for feed depends largely on the protein sources used in the formulation and, to a lesser extent, the age of the animal.

Feed Efficiency

Currently, the livestock industry's focus is no longer only directed at the feed as end-product – with just wanting to increase the nutritional value of ingredients and end-products but also on production feed technology concomitant attention for product quality, mill capacity, environmental impact/emissions control, and production costs. There are well-known beneficial effects of ingredient and feed processing technologies (van der Poel and Marchal, 2019) and these include:

- Producing a homogeneous mixture of diet ingredients (meal, pellets)
- Decrease negative effects of antinutritional factors in ingredients (trypsin inhibitors, lectins, glucosinolates)
- Increase feed safety (reduction in micro-organisms)
- Increase nutrient digestibility/absorption (better feed efficiency)
- Increase feed intake (less spoilage)
- Find a balance between feed efficiency and animal health

Managing immunity and gut microbiome through nutrition offers enormous untapped potential for improving overall health. Pre- and pro-biotic molecules in feed, are added with focus on innate immunity. Products are already making an impact such as in reducing the need for antibiotics, with focus on reducing antimicrobial resistance. Phytogenic, or plant-based, substances with anti-bacterial properties, are increasingly being identified, combined, and added to animal feed to alter the gut microbiome, improve immunity, and protect against specific diseases. Novel or alternative animal feeds such as insect-based protein, sea weeds, single cell protein and microalgae are opening opportunities for precision nutrition.

Feeding animals according to stage of life, gut health and environmental factors offers benefits for health and welfare as well as sustainability and traceability.

Applications Solutions

The solutions and tools to achieve precision animal nutrition includes more precise ration formulation based on nutritional value of each batch of ingredient, effective utilization of available feed resources with the aim of maximizing the animals' response to nutrients.

Information on the raw material and feed data nutritional value through tools such as Near Infra Red Spectroscopy (NIRS) or Inline NIR can help the nutritionists in decision making. On farm and feed plant, feed formulation have been optimised with use of feed formulation software with training and experience.

Models are domains available where nutritionists can make decision to optimise to get the best return by adapting the feeding programs as raw materials and end-product (meat) market prices change. For e.g., the Broiler Model from Trouw Nutrition

Conclusion

Animal production and health challenges are ever evolving. Farm animal productivity is on average 30-40% below their genetic potential because of suboptimal management, nutrition and health. Feed and technology involved in the processing of ingredients and the manufacture of animal feeds is an integral part of animal production systems to provide high-quality and nutritious food. Innovation focus areas in animal nutrition have been highlighted namely early life nutrition, health & welfare, feed efficiency and application solutions. Accurate and fast testing will be essential to account for the variability within ingredients and the different practices used in the equipment and raw material processing, as well as in feed mills. Big data will play a pivotal role to model specific aspects of feed manufacturing and would enable the development of a model integrating characteristics of diet ingredients, recipe, and processing conditions. Collaboration between skilled data scientists, feed manufacturing technologists and nutritionists, using advanced data analytics is pivotal for future innovations in animal nutrition.

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Article

Understanding the Key Role of NSPases in Early Broiler Nutrition

Natalia Soares
Global Product Manager Enzymes
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The early nutrition of broilers plays a key role in their lifetime productivity as, in this intensive growth period, the gastro-intestinal tract (GIT) is under development. Alongside efficient nutrient utilisation, a healthy gut will support a robust immune system. It is widely accepted that maintenance or improvement of gut health is essential for optimum growth, better feed efficiency and overall health.

As the bird shifts from a metabolism based on lipid-rich yolk to a solid carbohydrate and protein based diet at hatch, the diet has a crucial influence on the subsequent growth and development of broiler chicks considering that the GIT of newly hatched birds will be functionally immature. Research has already demonstrated a strong positive correlation between early life weight and body weight at the end of the production cycle.

Improved performance has been reported in broilers by feeding pre-starter diets containing carbohydrates and fat during the first hours of life.

Additionally, starter diets are prepared with more focus on digestible nutrients than the total requirements and it can precondition the bird to later digest more complex substrates once the enzymatic system in the GIT becomes mature. Since highly digestible alternative substrates tend to be more expensive, the use of exogenous enzymes can be a tool to improve productivity.

Exogenous enzymes, namely non-starch polysaccharide degrading enzymes (NSPases), are nowadays an essential additive in the diet of high performing birds, being fed throughout the life cycle.

Table 1. Performance improvement expressed as % body weight improvement over control and % of FCR improvement over control in five different broiler performance trials.

Trial	Improvement Over Control at the End of the Trial	
	BODY WEIGHT	FCR
1	3	2
2	3	3
3	4	1
4	5	3
5	3	2

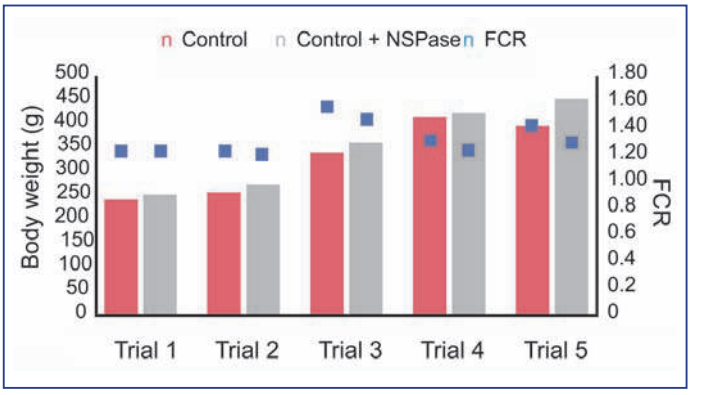

Fig. 1 summarises the performance results at the end of the starter diet feeding phase of all trials. All trials showed results for body weight and FCR with significant differences (at p<0.05 or 0.05sp<0.1).

The Role of NSP Degrading Enzyme in Early Development Stages of Broiler

To evaluate the effect of an NSP degrading enzymatic complex, Hostazym X, on the early life stage of broilers growth, a set of five equivalent zootechnical performance trials was pooled from recent Huvepharma research. The results were analysed for the correlation between starter phase performance and all life cycle performance. A high nutrient dense control diet was compared with the same diet supplemented with Hostazym X.

All trials were set as 42 day grow-out experiments using wheat, maize, soybean meal based diets for the starter phase and wheat, maize, soybean meal and rapeseed meal for the grower and finisher phases.

The trials compared two treatments, a control diet fed group and a control plus enzymatic complex (at 1500 EPU/kg) fed group. Standard performance indicators were measured.

The added value and efficacy of the enzymatic complex can be clearly seen at the end of the starter phase where broilers show a significant positive performance response averaging plus 23g body weight and six FCR points less.

Following the overall performance results (full life cycle) the difference amongst treatments is up to 5% improvement in final body weight and 3% in FCR, demonstrating that a better start reflects a better/more efficient end (Table 1).

Conclusion

NSPases, namely enzymatic complex Hostazym X, play a key role in the nutrition of high performing young birds providing optimal performance results. They help the bird to cope with nutritional challenge and stress by getting the most out of the diet for growth metabolism. This supports an efficient use of nutrients while the GIT and the endogenous enzymatic systems are still under development.

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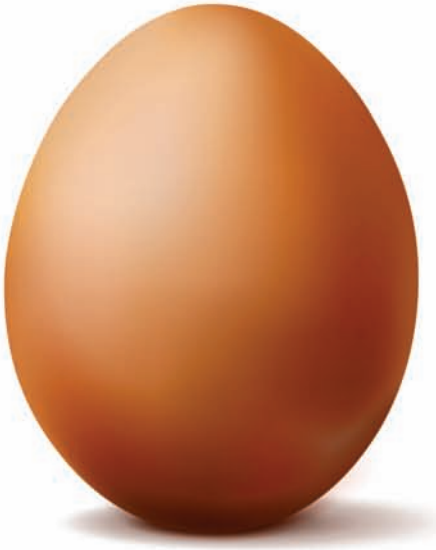

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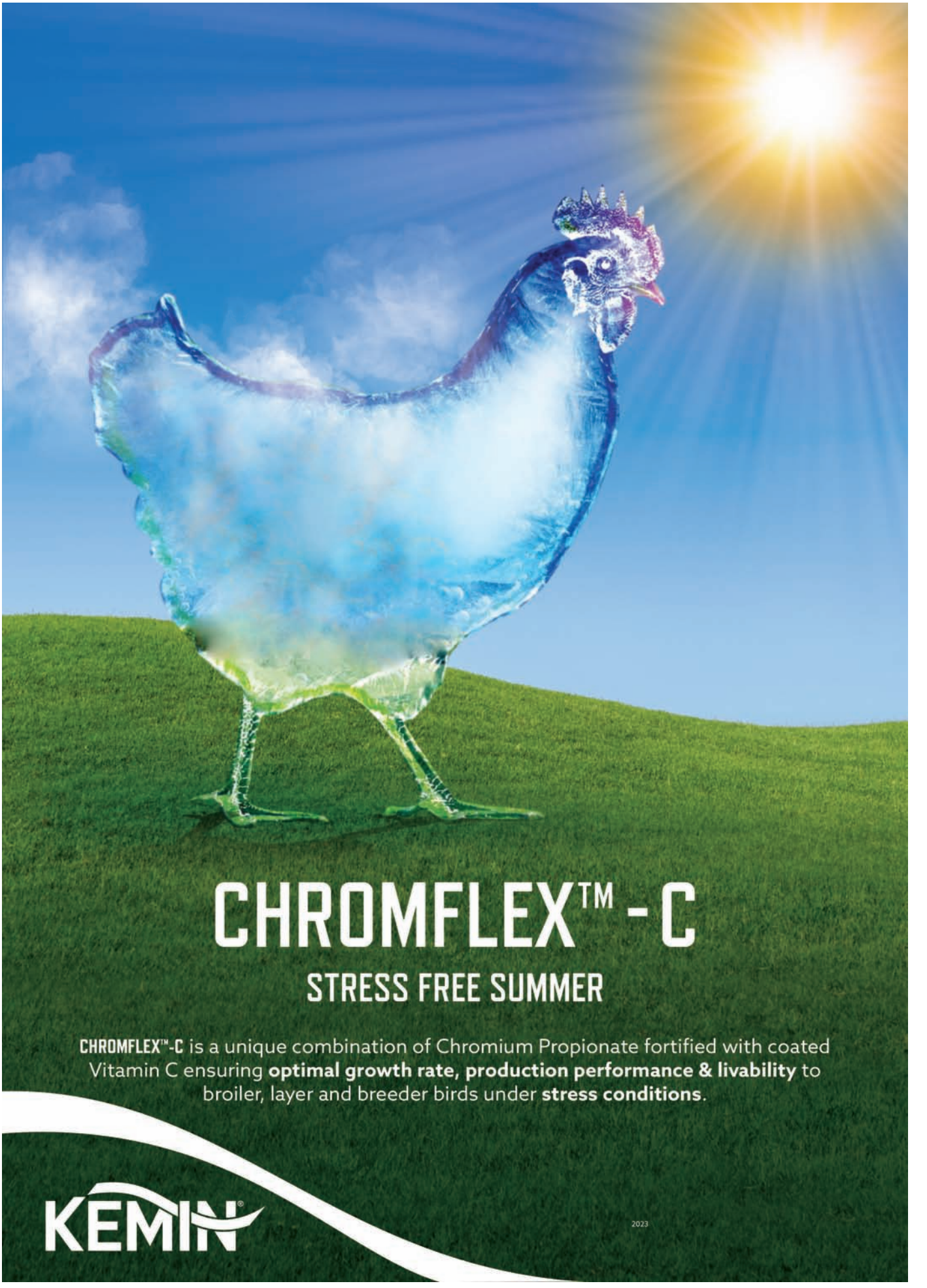
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Article

Surging Demand for Affordable Protein Fuels
Protein Industry's Next Growth Phase

Ricky Thaper
Treasurer
Poultry Federation of India

India has vast resources of livestock and poultry, which plays a vital role in improving the socio-economic conditions of rural masses. As per the 20th livestock census, there are about 303.76 million bovines (cattle, buffalo, mithun and yak), 74.26 million sheep, 148.88 million goats, 9.06 million pigs and about 851.81 million poultry. The Indian poultry sector has played a crucial role in meeting the protein and nutritional needs of a vast section of the population. Currently while the production of agricultural crops has been rising at a rate of 1.5 to 2% per annum, that of eggs and broilers has been rising at a rate of 8 to 10 percent per annum.

Poultry production in India valued at $ 30 billion has taken a huge-leap in the last four decades, emerging from conventional farming practices to commercial production systems with state-of-the-art technological interventions. Currently the sector is estimated to employ more than 6 million people either directly or indirectly. The small and medium size farms (5000 birds onwards) are mostly engaged in contract farming systems under larger integrators or companies.

According to the Ministry of Fisheries, Animal Husbandry and Dairying, the poultry sector grew 8% annually during 2006-7 to 2021-22. The poultry meat output of 4.5 million tonnes (MT), contributed to 51.4% of the total meat production of 9.3 MT in 2021-22. A report titled 'Vision 2047: Indian Poultry Sector by Confederation of Indian Industry (CII) has stated that the growth in the poultry sector in the country has been attributed to the commercial poultry industry which accounts for 85% of production while the balance 15% of the output comes from the traditional backyard poultry. India has transformed its poultry farming industry through major investments in breeding, hatching, rearing, and processing of chicken. India, is the third-largest producer of eggs (129.60 billion) and the fifth-largest producer of poultry meat (4.5 million tonnes) globally. As per the FAOSTAT, USA has 17% share in global poultry meat production followed by China (12%), Brazil (11.7%), Russia (3.8%) and India (3.5%).

The government has been supporting the growth of the poultry sector through several initiatives like dedicated funds for setting up units, disease surveillance and providing support for ensuring supply of animal feed for the sector. The Animal Husbandry Infrastructure Development Fund, launched with a corpus of Rs. 15,000 crores in 2020, was recently extended for three years till 2025-26 under Infrastructure Development Fund (IDF) with an outlay of Rs. 29,610 crore. The central government provides a 3% interest subvention to the borrower and credit guarantees up to 25% of total borrowing. The interest subvention is for 8 years including two years of moratorium for loans up to 90% from scheduled banks and National Cooperative Development Corporation (NCDC), NABARD and National Dairy Development Board.

More than 5000 odd project proposals have been received under the fund which aims to incentivise investments for dairy processing and product diversification, meat processing and product diversification, animal feed plant, breed multiplication farm, animal waste to wealth management (agri-waste management) and veterinary vaccine and drug production facilities. Investment proposals for the modern poultry farms and feed plants have availed funds under this scheme.

The stakeholders include All India Poultry Breeders Association (AIPBA), Indian Dairy Association (IDA), Compound Livestock Feed Manufacturers' Associations (CLFMA), All India Livestock and Meat Exporters' Association (AILMEA), Poultry Federation

of India (PFI) and others associations who have been suggested by Animal Husbandry Department to create awareness about the scheme.

The World Organisation for Animal Health (WOAH) has approved India's self-declaration of freedom from Highly Pathogenic Avian Influenza (HPAI) or referred to as bird flu in specific poultry compartments. Compartmentalisation is a crucial tool that enhances animal health, reduces the risk of disease outbreaks within and outside the compartment, and facilitates the trade of poultry and poultry-related products, according to an official statement. The Department of Animal Husbandry and Dairying has submitted a self-declaration of freedom from High Pathogenicity Avian Influenza in 26 poultry compartments in four states - Maharashtra, Tamil Nadu, Uttar Pradesh, and Chhattisgarh to the WOAH. During 2022-23, India exported

poultry and poultry products worth $ 134 million to 64 countries. The approval of this self-declaration is expected to boost Indian poultry in the global market.

The National Livestock Mission's submission on Breed Development of Livestock & Poultry aims at bringing sharp focus on entrepreneurship development and breed improvement in poultry, sheep, goat and piggery by providing the incentive to the eligible entities like Individuals, Farmers Producers Organizations, Farmers Cooperative Organizations, Joint Liability Groups, Self Help Groups, Section 8 companies for entrepreneurship development and also to the State Government.

Feed Supply with Rising Demand Remains a Challenge for the Sector

There has been increasing diversion of maize towards industrial use and ethanol production. Due to limitation of diversion of sugarcane towards ethanol production and to meet rising demand from animal feed and biofuel manufacturing, the government is aiming to increase production of maize by 10 percent to 42 million tonne (MT) by 2025-26 from 38 MT in 2022-23 crop year (July-June) through initiating measures such as crop diversification, cluster development for ethanol plants and involving private sector in seed development.

About 60-65% of the output of maize is used as poultry and animal feed while 20 percent is used for industrial use. The current growth level of maize and soybean production in the country will be insufficient to meet the demand of the poultry industry. The industry associations have urged the government to allow imports of GM maize and soybean because of 'unprecedented increase' in prices while adding that interest of the domestic producers should be protected too. Several South Asian countries including Bangladesh, Nepal and Sri Lanka have allowed imports of GM soymeal.

In August, 2021, the government had relaxed import rules to allow the first shipment of 1.2 MT (million tonne) of Genetically Modified soymeal to support the domestic poultry industry after a record spike in feed prices.

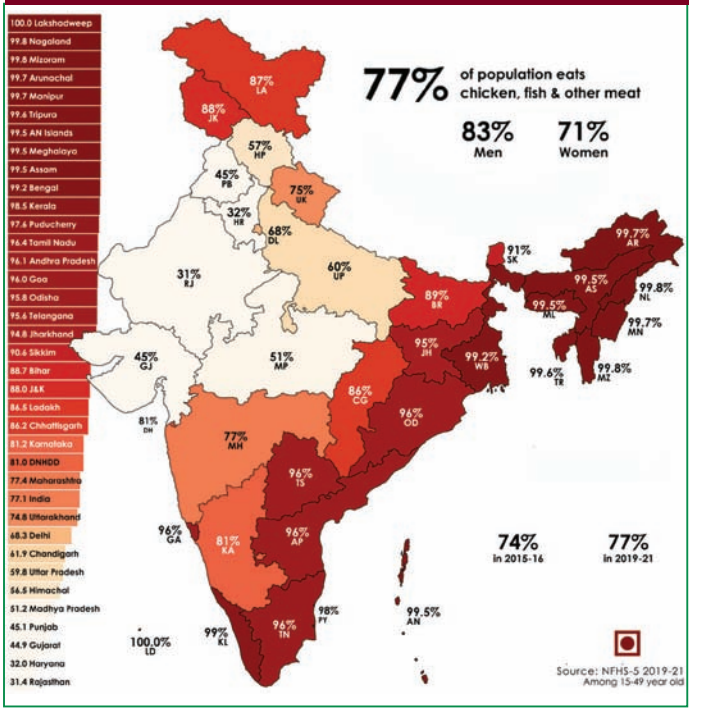
Poultry Protein Promotion: A Collaborative Effort

Chicken meat and eggs are perceived as healthier alternatives to red meat, driving up demand. Poultry products are often more affordable than other protein sources, making them accessible to a broader segment of the population. In the post COVID-19 pandemic phase, demand for protein rich food like poultry meat and eggs have increased sharply. The growing awareness regarding health and wellness is further driving the demand for a protein-rich diet.

To promote poultry meat as a key driver of increasing protein intake, Poultry Federation of India recently organised a press meet at Press Club of India, New Delhi, on Poultry Protein jointly with the United Soybean Board, USA Poultry & Egg Export Council, and the World Veterinary Poultry Association. The objective of this meeting was to pitch for promotion of chicken and eggs as the premier source of protein for consumers. Additionally, various other associations including CLFMA of India, NECC, All India Poultry Breeders Association, IPEMA, Vets in Poultry, INFAH, North India Broiler Producers Association, Karnataka Poultry Farmers & Breeders Association, Andhra Pradesh Poultry Federation, Telangana Poultry Federation, Poultry Breeders Association-Telangana, Poultry Farmers' and Breeders' Association-Maharashtra, Broiler Breeders Association-North, Central Haryana Area Poultry Farmers Association, West Bengal Poultry Federation, along with other regional and state-level associations, are collaborating towards promoting chicken and eggs within their respective regions.

A major chunk of the country's population eats non-vegetarian food. Poultry meat and eggs remain one of the healthy and economical sources of protein. Post COVID-19, several consumers have added poultry meat and eggs to their diets.

What Percentage of Population Eats Meat in India



There are several companies willing to invest in the Indian poultry sector which is witnessing a steady growth rate over the decades. The government must take proactive measures to improve feed supplies so the growth and value-addition of agriculture and allied sectors such as poultry, dairy and shrimp farming is sustained.

As 100 percent Foreign Direct Investment is permitted through automatic route in the food processing sector including poultry sector, there is a huge opportunity for upgrading infrastructure, breeding, medication, feed production, vertical integration and processing and there are several multi-national companies that have envisaged plans to invest in the Indian poultry sector.

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COVER

SUMMER SAFE FROM HEAT EXHAUSTION

Summers in the tropics can be scorching during the heatwaves, which have been increasing in frequency over the past few years as a result of climate change and shifting weather patterns. IPR researches expert recommendations on things to know about daily chicken care during the warmest part of the year

The average high temperatures are in the range of 40-45°C easily in India in the months of May-June. India is the third larest egg producer in the world and fifth largest broiler producer, and poultry farm sheds are often built in open fields where during summer afternoons temperatures soar and can reach upto 48°C. In these conditions, the birds inside the sheds bear the brunt of this extreme heat. Even though some of the farms have overhead or standing fans, cooling the entire area is difficult, especially with frequent power outages. Death due to heat exhaustion is a regular occurrence in these circumstances.

Under these soaring temperature and sweltering heat conditions, poultry farmers need to take extra care of the birds, particularly in the current situation. Dr. APS Sethi, Senior Nutritionist (Poultry) of Guru Angad Dev Veterinary and Animal Sciences University, in an interview to *The Tribune*, said that poultry do not have sweat glands and have a thick cover of feathers. During summers the birds consume less feed and more water due to which their growth rate, egg production, egg shell quality and hatchability all get adversely affected and the mortality rate becomes high. Incidence of diseases in the flocks also increase because of wet litter, immune suppression, vaccination failures and contanimation of drinking water.

Visits to farms reveal cages have water sprinklers that are pressure activated when a chicken pecks on it. Some also have a thin plastic trough placed alongside the outer part of the cages where water is released at particlar times of the day. Despite these features, the birds are found panting constantly and birds lying on the floor with their wings spread wide, desperately trying to cool themselves.

Dr. Sethi recommends that poultry farm managers should ensure relief to the birds by growing grass cover on the grounds surrounding the poultry house. This would reduce the reflection of sunlight into the house. Vegetation should be kept trimmed to avoid blocking of air movement and to help reduce rodent problems. "Shady trees should be located in such a way that these do not restrict air current. Keeping a reliable, clean, cool source of water available to help the birds cope with high tempertaures is important. As the birds excrete eletrolytes during periods of heat stress, additional electrolytes can be added to the drinking water to compensate the loss to stimulate water consumption. The number of waterers and frequency of watering should be increased during summer months. In case of nipple drinkers, frequent checks of nipples should be monitored," he adds.

According to Dr. Sethi preventative treatment through drinking water should be given. In moderate hot weather, ascorbic acid, acetylsalicylic acid, sodium bicarbonate and potassium chloride can be added in drinking water to maintain electrolyte balance. Egg collection frequency at the farm should be increased and ideally cold room should be available for egg storage in the hot summer months, he stressed.

Both egg-laying hens and broiler birds are bought from hatcheries when they just a few days old. These chicks are kept in an open floor shed, where they are fed constantly on a mix which includes a variety of medicines and supplements.

On egg farms, after 120 days, the new adult hens are shifted in groups of upto six. Their beaks are blunted or they are debeaked – this is in order to prevent injuries from attacks given the intense heat. The hens stay in these groups until their egg production declines and they are sent for culling.

On broiler farms, the chicks remain in open floor sheds until they reach optimum weight, which can be as soon as four weeks. These sheds can hold between 8000 to 15000 chicks. Poultry birds kept in cages seem more agitated and are in visible heat stress, in contrast to the floor shed birds which move freely, in relaxed manner.

Usually rows of battery cages are stacked up on top of each other inside tin-roofed, open sided sheds where hot wind passes through the open sides. Each such shed can hold anywhere between 8000 to 18000 egg laying hens. The hens live and survive hot summer months during their productive life. Their living standards along with suffering exacerbated by intense heat waves need extra careful treatment, monitoring continuously along with the abnormal climatic conditions and the birds behaviours. Instead of foraging in the dirt for insects and seeds, dust bathing and experiencing life in a flock with social pecking order for anywhere up to ten years, farmed chickens have a short but highly standardised, better monitored and relaxed life even if in confinement.

It is, therefore, important to understand environmental stress causing adverse effects on the performance of poultry. Heat stress negatively affects the welfare and productivity of broilers and laying hens. The detrimental effects of heat stress in poultry ranges from reduced growth and egg production to decreased poultry and egg quality and safety. Understanding and controlling heat stress in poultry is crucial to successful poultry production and welfare. Ideal temperature for poultry rearing is 18-28°C and the temperature above which heat stress starts is 30°C.

The visible effect of summer temperature on poultry performance comes in manifold. Not only does it result in rapid respiration or panting and prostration due to heat stroke in the birds, it also results in poor feed conversion effciency, decrease in feed intake and increase in water intake, decrease in weight gain of birds, lowering resistance to disease directly resulting in decrease in egg production, reduction in egg size, poor shell quality of eggs to an extreme level of increase in cracked eggs, decrease in fertile eggs and reduced hatchability percentage.

In the quest to combat heat stress causing adverse effects on the performance, welfare and productivity of poultry farming in summers, the aim is to adopt measures of giving extra care to the birds, to ensure achieving targets of number of eggs from layer and a better body weight at particular age with specific food conversion ratio (FCR) in broilers.

Maintain Plenty of Fresh Water

Hydration is key. As temperatures climb, water should be plentiful and fresh. One chicken can drink as much as one litre of water a day during the summer. If the farm is large or number of birds

are huge, make sure multiple water sources are available. Use waterers that have enough capacity so they won't run dry. When it is really hot, consider setting frozen water bottles inside the waterers to help keep the water cool for longer times. Place the water source in the shade and replace it often. Clean it frequently to minimize or eliminate the growth of algae, bacteria and fungus. The fresher the water, the more the chickens will drink and produce eggs. When temperatures reach a peak, adding an electrolyte to the water can help keep a chicken's body regulated during stressful conditions.

Pratically water is the most important criteria of poultry management during summer. In summer water consumption is 3-4 times more. Normally feed-water consumption ratio is 1:2 but when temperature shoots beyond 35°C, this ratio may increase up to 1:4 or more.

Here are some of the pratical points to be taken into consideration

- Supply of plenty of clean and cold water is most crucial and must be ensured
- Using treatment products in water to control infection through water
- Covering water tanks with wet gunny bags to avoid direct exposure to sun
- Increasing frequency of watering
- Addition of 0.25% salts to drinking water like sodium carbonate increases the water consumption
- Do not withhold drinking water from flock when vaccine is provided through drinking water
- In case of nipple drinkers, insulate nipple pipe with wet gunny clothes

Feed What They Need

Along with fresh water, it is important to keep feed in a feeder. Hot weather is harder on chickens, hence chickens consume less feed in summer. Make sure they have access to feed in the early morning and late evening. Feeding higher protein will help with nutritional requirements. Feeding should be a complete meal as recommended by experts based on layer formulae. Instead use ingredients that help them cool down.

Essential check points of summer feed management in poultry are as below:

- During summer consumption of feed by birds is reduced considerably leading to reduced body weight, egg production and shell quality
- Increase the frequency of feeding
- Do not offer feed during day time, offer feed during cooler part of the day (early morning and evening)
- Increase nutrient density of feed to compensate for depressed feed intake
- Supplementation of limiting amino acids like methionine, lysine, threonine will give better results rather than supplying total proteins
- 20-30% extra vitamins and trace minerals should be added to feed
- Vitamin C is antistressor and increases survivability of heat stressed birds. Supplementation of 200mg/kg of vitamin C in combination with vitamin E (125mg/kg) or 1 gm ascorbic/litre of drinking water throughout heat period is recommended
- Vitamin E acts as an antioxidant and supplemtation of vitamin E @125mg/kg diet was beneficial to improve body weight gain, breast & liver yield, immunocompetence, economic and overall welfare of broiler chicken during extreme hot conditions

- Administration of vitamins like B2, B6, B12 have positive effects on body weight and immunomodulatory effect under heat stress
- Addition of ammonium chloride, potassium chloride and/or sodium bicarbonate have improved performance of broilers by improving water and feed intake
- Use of probiotics by controlling the corticosterol level and the excessive release of proinflammatory agents. Lactobacillus based probiotics enhance goblet cell count in duodenum and jejunum of heat stressed broilers thereby improving feed conversion ratio (FCR)
- Addition of multistrain probiotics (Lactiplantibacillus plantarum, L. bulgaris, L. acidophilus) increase egg producton and feed intake in poultry
- To enhance increase in feed intake and prevent selective feeding, feed may be given in pelleted form
- Since hot humid climate favours growth of mould/fungi in feed so constant use of antifungal is recommended

Give Your Chickens Shade

Chickens will need access to both sun and shade. They will want sunlight at times, but it is best to keep them in the shade as much as possible. Try to ensure your poultry housing is located in cooler, shady spots or arrange adequate cooling for chickens to feel a breeze. The birds also need an area to dust their feathers and they love to do it often. Provide ample spacing for dusting and co-existence. Shifting, transportation, debeaking and vaccination should be done during night or cool hour of the day. Birds severely heat stressed may be dipped in cold water for 2-3 minutes keeping their head and neck above water level.

Keep a Clean House

Cleanliness is another crucial factor in keeping healthy, productive poultry, especially in summer. Keeping the poultry shed clean, dry and well ventilated can help to stave off disease and sickness in flocks. A clean space also helps keep odours and flies under control. This will lead to more egg production and healthy birds.

Here's some of the housing management tips for summer months:

- Orient the long axis of poultry house in east-west direction to minimize solar heating and direct access to sunlight
- Poultry house in tropics should have good roof insulation (if possible, with false roof to reduce the conduction of heat)

with support of foggers and cooler systems

- Increase air movement over the birds by cooler, fan/exhaust to produce a wind chill effect which cool birds even without drop in the house temperature
- Shed design and construction should allow direct sunlight on birds
- Thatching of roof with paddy straw or sugarcane leaves will reduce temperature inside the shed
- The roof should be painted with white wash to reflect light
- Shade from tall trees and plantation around the shed can reduce the radiant heat. The plantation of trees should be such that the trees will be leafy during summer and bald during winter
- Roof overhangs should be sufficient (3-5 feet) to protect the birds fom strong sunrays
- Depth of litter should be 2-3 inch on the floor. Stir the litter regularly to prevent caking
- 10% extra floor space should be provided in summer. Overcrowding of birds must be avoided
- Use foggers in shed which may reduce the shed temeperature up to 5-10°C, depending upon quality
- The house should be situated away from other buildings in order to facilitate free movement of air

Control Pests

While feeding in summers, make sure you don't waste. One way to reduce waste is to use hanging feeders. Feeders should be hung about chest height or the same height as your hen's back to help reduce the amount of feed that falls to the ground. Such wasted feed will attract insects and rodents. Also hanging feeders reduce feed that is scratched out of the bowls, and prevents incidents of rodents getting into the feeders. It is easy to clean up any spilled feed or scratched -out feed each day. This also reduces the rodents and other insects from coming to the shed for a snack. When pests interfere with chickens they stop laying eggs. Along with a clean house there are several strategies for keeping the flies at bay. Sticky traps, poultry- approved sprays and poultry-safe pesticides can be used from time to time.

Don't over feed. Get an idea of how much the flock is consuming, given that poultry eats less in summer, adjust as needed. When you start to see feed left at the end of the day, you begin to adjust how much feed is to be given in the morning. When the feeders look like they were swept clean, you know it's time to increase the feed amount.

Making simple adjustments, while choosing the best feed for chickens, will help your flock breeze through the hot summer months. As they begin to moult and grow in the winter down and new feathers, their bodies will be prepared because they had the proper nutrition during the summer.

*(**Reference:** Summer Management of Poultry by Team Pashudhan Praharee. Geeta Choudhary, Sheela Choudhary, Manju, Monika Karnani, Department of Animal Nutrition, PGIVER, Jaipur, Rajasthan)*

SAVOURY SUMMER SUGGESTIONS

Because your chickens will probably be eating less feed during summer, it is important to feed a balanced, high-quality feed. When feeding chickens the best feed, you are guaranteeing they will have the nutrients needed to stay healthy.

Probiotics for chickens are an important thing that can be added to ensure good health. Probiotics can be found in apple cider vinegar and fermanted grains. Yogurt with live culture and Kifer are also good sources of natural probiotics. Be careful to not overdo milk products in your chicken's diet. A little is helpful. A lot might cause digestive upset from the milk proteins. If only one item is added to the best feed for chickens, it would be fresh probiotic food supplements.

In addition, feeding a calcium supplement is a good idea. This ensures that egg shells are strong and the birds are not depleting their calcium levels. When choosing to not use too much poultry feed during the summer, you need to be extra careful in observing the chicken's condtion. Weight loss, skin colour, comb and wattle condition and egg shell quality are clues that show if the chicken are getting enough nutrients. A safe feeding regimen could include limiting grain to morning or evening only and go slow rest of the day.

When people worry about keeping chickens warm in the winter, remember it's more important to keep the birds cool in the summer. Scratch grain mixtures often contain a large amount of corn. Corn adds high carbohydrate levels to the chickens' diet and carbohydrate energy releases heat. While this heat creation helps in the winter, it is unnecessary for the summer and just becomes empty calories. A common myth claims that feeding corn during the summer will overheat your chickens, but this is not true. It simply adds unnecessary calories.

Instead, chicken love cooling treats like watermelon, ice blocks with frozen herbs, chilled chopped vegetables and even frozen fruit popsicles. Mint is also a cooling plant and one that grows easily in most locations. The chIckens can safely eat mint and mint also repels rodent and flies.

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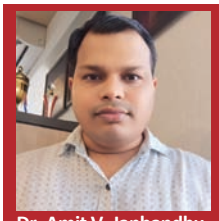
Article

Halquinol in Poultry Farming: Promoting Growth and Efficiency

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Over recent years, there has been a substantial increase in broiler productivity, primarily attributed to the widespread adoption of antibiotic growth promoters (AGPs) in poultry farming. These AGPs serve as a proactive measure against infectious bacterial diseases or as a treatment option (Abreu et al., 2023). However, the extensive utilisation of these antimicrobials has led to the development of resistance, which has significant implications for both animal and potentially human health. A recent study has projected an 8.0% global increase in antimicrobial usage in food-producing animals by 2030 (Mulchandaniid et al., 2023). Interestingly, despite a gradual decline in AGP use in birds over the years, challenges persist in maintaining optimal intestinal health and, consequently, bird performance (Korver, 2023).

Halquinol, also known as chlorhydroxyquinoline, is a potent non-antibiotic compound recognized for its remarkable antibacterial, antifungal, and antiprotozoal properties. It consists of a blend of three chlorinated oxines: 5, 7-dichloro-8-hydroxyquinoline, 5-monochloro-8-hydroxyquinoline, and 7-monochloro-8-hydroxyquinoline (Cosgrove, 1977). This compound is formulated into various pharmaceutical dosage forms suitable for both human and veterinary applications. Its mechanism of action involves broad-spectrum antimicrobial activity, achieved by inhibiting respiratory enzymes within the cytoplasmic membrane of target organisms. This mechanism sets Halquinol apart from quinolones (World Health Organization & Food and Agriculture Organization of the United Nations, 2021). In the context of poultry production, Halquinol is frequently used as a feed additive, particularly in developing countries (Basit et al., 2020; Habib et al., 2019). Notably, there is no evidence from microbiological studies suggesting the development of resistance to Halquinol.

Halquinol effectively addresses malabsorption syndrome by virtue of its wide spectrum of activity and its ability to slow down peristalsis in the gut (Nischal et al., 2012). Despite being primarily a gut acting compound that is not absorbed by the gastrointestinal tract, Halquinol exhibits triple-action as an antidiarrheal product, targeting bacteria, fungi, and protozoa. Its efficacy is notable for its minimal to no resistance development in bacteria even with prolonged use (Wojtowicz, 1984).

In modern poultry and swine farming, Halquinol is incorporated into feed at varying levels to tackle challenges such as microbial infections and promote growth. This is attributed to its broad-spectrum antimicrobial properties encompassing antibacterial, antifungal, and antiprotozoal activities (Wojtowicz, 1984). A study trial conducted on Cobb birds at a poultry farm assessed the impact of Halquinol on productive performances, carcass traits, further validating its beneficial effects in practical farming scenarios.

Trial Report using Halquinol 12%, 60% (Staquinol – Stallen South Asia Pvt. Ltd.)

Materials and Methods

A total of 120, 7-day-old broiler chicks were procured from a commercial breeder. These chicks were randomly allocated into four dietary treatment groups, labeled as T0, T1, T2, and T3, with each group comprising 30 birds. Within each treatment group, there were three replicates, each containing 10 birds. The birds were reared for a duration of 5 weeks.

- T0: Control diet without Halquinol supplementation.
- T1: Diet supplemented with Staquinol 12% (Halquinol 12%)@ rate of 0.5g/kg of feed.
- T2: Diet supplemented with Staquinol 60% (Halquinol 60%)@ rate of 0.1g/kg of feed.
- T3: Diet supplemented with a combination of Staquinol+ (Halquinol 55%, Doxycycline5%)@ rate of 0.1g/kg of feed.

Throughout the experimental period, the birds were monitored closely, and their growth performance, carcass traits, and blood profiles were assessed to evaluate the impact of the dietary treatments.

Feed Intake

Table.1. Birds in groups T1 (Staquinol 12% at 0.5g/kg feed) and T2 (Staquinol 60% at 0.1g/kg feed), as well as T3-Staquinol+ (Halquinol 55%, Doxycycline 5%) @ rate of 0.1g/kg of feed exhibited the highest feed intake compared to the control group (T0), which showed the lowest feed intake.

Table 1: The effect of Halquinol (Staquinol®/ Staquinol +) supplementation on broilerslive weight gain

Body weight (g/bird/wks)	T0	T1	T2	T3	Significance
Initial Live Weight	43.8±0.15	43.6±0.05	43.7±0.05	43.3±0.35	NS
1st wks	201.1±0.58	201±0.58	201.7±0.58	201.3±0.58	NS
2nd wks	515.6±15.27a	540.1 ±5.57b	551.7±4.5bc	561.0±2.00c	*
3rd wks	1112.0±12.77a	1147.7±15.27b	1163.3±4.04bc	1181.0±5.00c	*
4th wks	1699.7±10.07a	1755.3±10.50b	1773.7±6.11b	1800.3±15.27c	*
5th wks	2238.3±6.43a	2315.0±12.16b	2335.3±6.03b	2366.7±20.13c	*

*T0=Control basal diet without Halquinol, T1=Staquinol 12% @ 0.5g/kg feed, T2=Staquinol 60% @ 0.1g/kg feed, T3=Staquinol+ (Halquinol 55%, Doxycycline 5%) @ 0.1g/kg feed .The mean values with different superscript (a to c) within the same row differs significantly, at least (P<0.05). All values indicate mean ± Standard error of mean, NS=Non-significant, * statistically significant (P<0.05).*

Feed Efficiency

Birds in groups T1 (Staquinol 12% at 0.5g/kg feed) and T2 (Staquinol 60% at 0.1g/kg feed), as well as T3 (Staquinol + at 0.1g/kg feed), demonstrated the highest feed efficiency in converting feed into meat.

Carcass Characteristics

Table 2 presents the carcass characteristics of broilers across the various treatment groups. Significantly distinct differences (P<0.05) were noted among the experimental groups concerning live weight, carcass weight, breast flesh weight, thigh weight, drumstick weight, abdominal fat weight, and wing weight. Specifically, Groups T1, T2, and T3 exhibited the highest live weight, respectively.

Table 2: Carcass Characteristics of Broilers Fed with Halquinol (Staquinol 12% & 60% / Staquinol +)

Carcass yield (g)	T0	T1	T2	T3	Significance
Carcass Weight	1531.7±49.8a	1588.3±11.0a	1599.0±15.09a	1721.0±96.81b	*
Breast Meat Weight	525.7±7.64a	561.0±5.00b	581.7±21.94bc	589.0±21.79c	*
Thigh Muscle Weight	314.0±5.00a	331.0±3.60b	336.3±5.03b	342.0±5.00c	*
Drumstick weight	196.3±7.64a	208.7±2.52ab	213.0±3.00bc	219.0±5.00c	*
Abdominal fat	31.0±2.00a	36.3±1.53b	39.0±2.00b	43.7±2.52c	*
Liver weight	57.0±2.00	61.7±1.53	61.7±3.05	62.1±2.64	NS
Heart weight	10.0±1.00	11.0±1.00	12.3±1.15	12.2±0.58	NS
Wing weight	110.7±1.53a	112.0±1.00a	115.0±1.00a	120.0±3.60b	*

*T0=Control basal diet without Halquinol, T1=Staquinol 12% @ 0.5g/kg feed, T2=Staquinol 60% @ 0.1g/kg feed, T3=Staquinol + (Halquinol 55%, Doxycycline 5%) @ 0.1g/kg feed.The mean values with different superscript (a to c) within the same row differs significantly, at least (P<0.05). All values indicate mean ± Standard error of mean, NS=Non-significant, * statistically significant (P<0.05).*

Conclusion

The study's results indicate that Staquinol, which contains Halquinol, functions effectively as a growth promoter, significantly impacting the weight gain and nutritional efficiency of broiler chickens. Therefore, incorporating Staquinol into feed at concentrations of up to 0.1g/kg or 0.5g/kg can enhance broiler growth, reducing the need for antibiotic treatments. This approach can lead to increased profitability for commercial broiler farmers, as it offers both effectiveness and cost-effectiveness. The use of these growth-promoting agents brings economic advantages without posing any adverse effects on human health.

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Article

Celebrate the Chilling Contraption Giving Us Fresh Food

SHRIDHAR speaks

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

The elaborate infrastructure we have created in order to eat food before it rots is one of the great triumphs of modern civilisation; and refrigeration and the concomitant cold chain would figure amongst the most significant marvels that have contributed to building this civilisation as also the global economy. It revolutionised the food sector besides making critical contributions to universal health care. Today, the cold chain not only keeps our food fresh but also stops vaccines from going bad, at least until they reach remote parts of developing countries with unreliable power supplies. "It is a huge undertaking to sort of untangle how refrigeration has changed what we eat," says Nicola Twilley, an American journalist.

On a warm summer's day, fish and meat will last only for an hour or so, fruit will be mouldy the next day and root vegetables like carrots might survive for a week or two if you're lucky. In the cold chain, fish will keep for a week, fruit for months, and root vegetables for up to a year. Freeze the food, and it lasts for longer; it is as simple.

Refrigeration has widened our choice of food: tropical fruits such as bananas could now reach anywhere, and in the process improved our nutrition too. If your home has no way to keep food cold and fresh, you have to make frequent trips to the market. With a fridge-freezer at home, you can do bulk shopping every week or two. And that, in turn, transforms the labour market. Less need for frequent shopping freed up women to take up alternative work. As communities get wealthier, fridges are among the first things people buy.

Finally, the cold chain extended to perishable food the economic logic of specialisation and trade. No doubt, you can grow French beans in France but perhaps it makes better economic sense to fly them from Uganda. Different growing conditions mean this kind of an arrangement also makes environmental sense. One study found that it was more eco-friendly to grow tomatoes in Spain and transport them to Sweden than to grow them in Sweden. Another claimed that it emits less carbon to raise a lamb in New Zealand and ship it to England, than to raise a lamb in England.

Imagine a world without refrigeration or freezing. Ice would be a rarity, but more importantly, the perishable foods we eat every day would be much more rare, and the ones that we could eat would taste totally different. You can preserve perishable foods without refrigeration, but that requires various strategies that affect the taste of the food. Let us explore refrigeration, a part of our daily lives that we have become accustomed to take for granted. It's easy to forget that before the advent of this technology, keeping food fresh was a daily struggle. The impact of refrigeration, however, goes way beyond just food storage, it has transformed our diets, lifestyles, society and economy.

Before the development of modern refrigeration techniques, it required a high degree of resourcefulness to keep the food fresh. Food preservation before the 1800s involved several methods, both innovative and cumbersome, to ensure your family had food all year round. Some of these popular techniques and practices are given below.

Ice Houses: As the name suggests, these were essentially insulated rooms filled with ice. Picture a small building packed with ice hauled from nearby lakes and rivers during winter. The stored ice was used to keep food cool during summer.

Root Cellars: These were underground rooms that used the earth's natural coolness to store fruits, vegetables, and other perishables.

Preservation Techniques: With no refrigerator in sight, people relied on the following a few fundamental techniques to make their food last. Salting cured meats as salt helps draw out moisture and prevent bacterial growth, effectively preserving the food. Smoking was popular for preserving meats and fish; it created a protective layer that helped slow down spoilage. Pickling involves preserving foods in vinegar or in a similar solution. The acidic environment helped keep bacteria at bay and as an added bonus gave us pickles. Seasonal eating was the norm. Without refrigeration, people's diets heavily depended on what was in season. This meant fresh fruits and vegetables in summer and a lot of preserved foods, like pickled vegetables and salted meats, in winter. The practice is still in vogue in the cold regions.

The birth of mechanical refrigeration was a game-changer in the world of food preservation and made everyone's lives a lot easier.

In the mid-1800s, inventors started tinkering with machines that could make ice. It sounds simple now, but back then it was groundbreaking: no more harvesting ice in the winter or dealing with a melting icehouse in the summer. By the late 1800s, early versions of refrigerators were developed. These were big and expensive.

However, they did make an appearance in large manor homes and revolutionised how food products were stored. These fridges also started showing up in industries like brewing, poultry and meatpacking. With mechanical refrigeration, food could now be kept fresh for extended periods. The need for salting, pickling, and smoking didn't disappear completely; these are present even in our modern lives, but these methods were no longer the only options for preserving food.

The invention of refrigeration wasn't just about keeping food fresh. It also allowed for a massive change in how food was distributed. No longer tied to seasonal and regional constraints, foods could now be transported over long distances without spoiling. This opened the door to a wider variety of foods being available to consumers all year round. The advent of mechanical refrigeration marked the beginning of a new era in food preservation and consumption.

The 20th century brought refrigeration right into our homes. What so far had been a luxury revolutionised the kitchen. In the early 1900s, refrigerators became compact and affordable for home use. The early models were clunky and required manual defrosting, requiring chipping ice off the inside of your fridge, but they were a big step ahead of the icebox. Families could now store fresh foods like meat, milk, fruits, and vegetables for longer periods with a refrigerator in the kitchen. This meant fewer trips to the grocery store and more variety in the everyday diet. It also meant less waste because foods that would have spoiled if not used quickly enough could now be saved for another day.

The science and technology of refrigeration underwent a marked improvement in the 1950s leading to an exponential demand of both home and commercial refrigerators. This development was a boon to poultry. Surging demand created intensive production practices, and this also necessitated prominence to poultry health and disease management.

Not only did the refrigerator change how we store food, but it also changed how we cook and eat. With more fresh ingredients available, people could experiment with new recipes. Before refrigeration, if you couldn't grow these, they weren't available to cook with or consume.

The impact of refrigeration on our diets and eating habits has been profound. It's not just about keeping food cold, it is about how we live our lives. Thanks to refrigeration, we can enjoy a wider variety of foods year-round. Now that a refrigerator is an essential appliance, fresh food is always just a few steps away. Further, with the ability to store a range of ingredients, refrigeration opens up a world of culinary possibilities. When you add the selection of frozen foods in your local supermarket, the possibilities expand even further. Refrigeration has wholly reshaped our eating habits. It has given us more choices, convenience, and opportunities to enjoy fresh, delicious food every day.

The science and technology of refrigeration underwent a marked improvement in the 1950s leading to an exponential demand of both home and commercial refrigerators. This development was a boon to poultry

As we look ahead, it is clear that refrigeration will continue to play a vital role in how we eat and live. Appliance manufacturers are always looking for ways to make our household fridges more energy-efficient, more convenient and advanced refrigeration technology to keep food fresher longer. In the world of refrigeration, the future looks bright and exciting. And as technology advances, who knows what delicious possibilities await us? From its humble beginnings in ice houses to the smart fridges of today, refrigeration has come a long way. It has reshaped the way we eat and the way we think about food multiple times over. Next time you reach into your refrigerator, take a moment to appreciate this marvel of modern living. Still a long way to go.

A 2022 report Sustainable Food Cold Chains published by the United Nations Environment Programme (UNEP) and Food and Agriculture Organisation (FAO) estimates that 526 million tonnes i.e. 14% of the food produced for human consumption is lost before it reaches the consumer. The report cites lack of effective refrigeration to maintain the quality, nutritional value and safety of food as the major contributor to this problem. The quantity lost would be sufficient to feed one billion people. The issue assumes shocking dimensions against the background of the fact that 3 billion people still can't afford a healthy and nutritious diet and as many as 830 million face chronic hunger. Another issue the report highlights is the uneven distribution of the food loss with developing countries and small holder farmers being put to greater suffering; post-harvest food loss reduces the income of about 470 million small-scale farmers by as much as 15%, mainly in developing countries. Further, as against the global average of 14%, the food loss in developing countries such as ours is pegged at 24%.

To feed the projected global population of 9.7 billion in the year 2050, food production has to increase, along with sustained action for reducing food loss, hence the need for more cold chains Therefore, investment in sustainable food cold chains deserves a high degree of priority.

A Comprehensive Analysis of World Poultry Feed Market Expansion

Poultry sector is one of the significantly growing meat sectors in the world. Therefore, improving poultry productivity is vital to feeding the world's expanding population. Due to storing economic growth demand for poultry products has already shown an upward trend both in China and India.

Factors such as population growth, disposable income growth, increasing production of broiler chicken meat and feed, and changes in consumers' dietary preferences are influencing global per capita consumption of poultry meat.

When poultry birds' intake of carbohydrates and fats is insufficient, protein is an essential source of energy. The demand for poultry feed is rising due to the shortage of anti-nutritional components such as phytic acid and the effects of unrestricted feed intake on the digestive tracts of poultry birds.

The rise in population is a crucial factor that is anticipated to support the expansion of the global poultry feed market. Furthermore, due to their low cost and a shift in customer tastes towards white meat rather than red meat, consumption of poultry-based products has expanded dramatically, globally.

Increased awareness of the value of protein in the diet can be partly blamed for the rising global per capita meat intake. Additionally, the Middle East, Africa, Asia Pacific have increased their production and consumption of meat, which has supported market expansion.

Growth in consumer demand for poultry meat products is the main factor driving the poultry feed sector. An increase in the output of industrial livestock and the demand for organic feed are further market growth drivers.

Both income and population have a big impact on the demand for poultry products. As packaged poultry feed develops more swiftly than conventional chicken feed, the market is expected to rise.

Quality and price of the feed products have become two of the most crucial factors in this sector, and suppliers are crucial to the poultry feed industry. Chicken feed companies are projected to get more involved in the manufacture of raw materials in order to control pricing, which is likely to alter market purchasing procedures.

The requirement for nutritional feed to avoid poultry diseases, as well as farmers' embrace of poultry farming as a source of income, is likely to drive the poultry feed market during the forecast period (2023-2033).

The poultry feed market is expected to capture a CAGR of 5.4% during the forecast period 2023 to 2033.

INTERNATIONAL

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Japfa Creates New Waves

In 2024-24 fiscal, Japfa Comfeed India plans to invest around $35-40 million, mainly to expand capacity in its cattle and aqua (for fish and shrimp) feed mills, state-of-the-art slaughterhouse, and upgrade breeder farms around India.

Speaking to the press, Amiya Nath, Vice President and Head of Feed said, "Japfa will invest around $15-17 million in feed, $5-6 million in internal farms, and about $15-16 million in its food division. Our goal is to double our turnover by 2026. While COVID-19 slowed progress, we are back on track."

Cattle feed is a growing market for Japfa. Nath informed they aim to strengthen their position in Maharashtra and Uttar Pradesh through capacity additions. He remarked that Uttar Pradesh has the largest cattle market in India, and Japfa's high-quality feed will make a difference there.

"The Indian cattle feed market is highly unorganised; a mere 25% use compound feed. But in the last two years, we have seen it grow at a CAGR of 15% as the government increased subsidies to promote dairy," he explained.

Furthermore, the Bureau of Indian Standards (BIS) has issued guidelines to standardize cattle feed in India. He is optimistic that, once mandatory, these regulations will help feed producers like Japfa to expand their base.

The company also invested in a laboratory accredited by the National Accreditation Board for Calibration and Testing Laboratories to guarantee the supply of high-quality feed to customers. "This is a first for a feed company as this accreditation is mostly sought for human-grade labs," he noted.

As its cattle feed business grows, Japfa is also expanding its poultry business, adding another 100,000 Poultry Parent Stock to its breeding farms. This would bring the total installed capacity to 2.5 million day old chicks in the coming years.

With this expansion, Japfa is constructing a large processing plant in Maharashtra with a final capacity of 6000 birds/hour (starting from 3000 initially). This is due for completion this year. Nath said they would supply 80% of the processed chicken to HORECA and the rest to their own retail stores.

"In the next 5-10 years, we see rapid growth in India's poultry consumption, and we are preparing for that. This will not only happen in urban centres but also rural areas," said Nath.

He also said that the company's entry into the aquafeed sector using the latest extruder technology will revolutionize the industry just as it did with poultry feed 25 years ago.

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Preventing Summer Stress and Early Chick Mortality: The Importance of GROX for Indian Poultry Farmers



Dr. Ramdas Kambale
CEO & Board Member

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Techno Commercial & Marketing Manager

Glocrest Pharmaceuticals

Summer stress and early chick mortality are major concerns for Indian poultry farmers. High temperatures, humidity, and other environmental factors can cause significant health problems for birds, leading to reduced growth rates, lower egg production, and financial losses for farmers. In this article, we will discuss the losses caused by summer stress and early chick mortality in Indian conditions and how GROX can help prevent these problems.

The Losses Caused by Summer Stress and Early Chick Mortality in Indian Conditions

Summer stress and early chick mortality can lead to various financial losses for Indian poultry farmers. The following are some of the ways in which these problems can impact your poultry business:

1. Reduced Growth Rates: High temperatures and humidity can cause heat stress in birds, leading to reduced feed intake and growth rates. This can result in lower weight gain and increased mortality rates, which can impact your profits.
2. Lower Egg Production: Heat stress can also impact egg production in birds, leading to lower egg output and quality. This can result in lower revenue for farmers, as well as decreased customer satisfaction.
3. Increased Mortality Rates: Early chick mortality is a common problem in Indian conditions, with chicks dying within the first week of hatching. This can result in decreased flock size and increased costs for farmers, as they need to purchase replacement birds.

Introducing GROX: The Ultimate Solution for Poultry Farmers to Overcome Summer Stress and Early Chick Mortality in India

Poultry farming is an essential industry in India, contributing significantly to the country's economy. However, poultry farmers face various challenges, including summer stress and early chick mortality, which can lead to significant financial losses. Therefore, it is crucial to take preventive measures to protect birds from these problems. One such solution is GROX, a unique blend of vitamins, minerals, and other essential nutrients that promote growth and development in poultry birds. In this article, we will discuss the benefits of GROX and how it can help Indian poultry farmers control early chick mortality and summer stress.

What is Early Chick Mortality, and How Does GROX Help in Indian Conditions?

Early chick mortality is a prevalent problem in Indian poultry farming, especially during the summer months. It occurs when chicks die within the first week of hatching. The causes of early chick mortality can be various, including genetic factors, bacterial infections, and environmental factors, such as high temperatures and humidity. GROX helps to address these issues in the following ways:

CAUSES

Genetic Causes

Managemental Causes

Nutritional Causes

Disesae Causes

1. Boosts Immunity: GROX contains essential vitamins and minerals that help to boost the immune system of chicks. For example, Vitamin C, Vitamin E, and Beta-Glucan are known for their immune-boosting properties. By enhancing the immunity of chicks, GROX helps to protect them against bacterial and viral infections prevalent in Indian conditions.
2. Provides Nutritional Support: GROX contains a blend of vitamins and minerals that are essential for the growth and development of chicks. These nutrients help to support bone development, feather growth, and overall growth. The lack of proper nutrition is one of the leading causes of early chick mortality in Indian conditions.
3. Improves Digestion: GROX contains prebiotics and probiotics that help to improve the digestion and absorption of nutrients. The prebiotic MOS and the probiotics Lactobacillus acidophilus and Saccharomyces boulardi help to maintain a healthy gut flora in chicks, which is essential for proper digestion and overall health.

What is Summer Stress, and How Does GROX Help in Indian Conditions?

Summer stress is a common problem in Indian poultry farming during the summer months. It occurs when birds are exposed to high temperatures and humidity, leading to various health problems, such as heat stress, dehydration, and reduced feed intake. GROX helps to address these issues in the following ways:

1. Maintains Hydration: GROX contains essential electrolytes, such as sodium sulphate and potassium sulphate, which help to maintain the hydration status of chicks. Electrolytes are essential for maintaining the fluid balance in the body, which is crucial during the hot Indian summer months.
2. Reduces Heat Stress: GROX contains Methyl Sulphonyl Methane (MSM), which is known for its anti-inflammatory properties. MSM helps to reduce inflammation and oxidative stress caused by heat stress, which is a common problem in Indian conditions.
3. Boosts Appetite: GROX contains protein hydrolysate, which is a highly digestible protein source. This protein source helps to boost the appetite of chicks, which may reduce during the summer months due to heat stress.

Conclusion

Summer stress and early chick mortality can cause significant financial losses for Indian poultry farmers. By using GROX, farmers can provide their birds with essential nutrients, boost their immunity, and reduce the risk of health problems caused by heat stress and other environmental factors. If you want to protect your poultry business from these problems, consider using GROX today.

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Glamac's Annual Conference at Darjeeling

Darjeeling, Queen of the Hills, played host to Glamac International's annual conference from 5th to 9th April. The poultry and aqua teams from across India and Nepal came together for this meeting.

The conference opened with an introduction by Abir Mukherjee, Founder and Managing Director, Glamac International. He highlighted the importance of teamwork, cooperation and collective growth.

The Guest of Honour at the conference was Sahil Deepak Salvi, an advocate of Mumbai High Court, who shared legal insights, enhancing the discussions with his knowledge on regulatory and legal issues relevant to the industry.

Meghana Mukherjee, Director, Glamac International, presented an ambitious digital strategy for the company, outlining a path for future innovations and growth. Her approach emphasised Glamac's dedication to staying at the forefront of the industry amidst dynamic market changes.

The financial strategy of the organisation was addressed by Senior Finance Manager, Sujit Jadhav, who shared detailed financial targets and plans that set a solid foundation for the upcoming fiscal year. His presentation provided a clear direction for the company's economic path forward.

Technical seminars led by Dr. Sumon Nag Chowdhury, AGM – Technical & Marketing and Product Managers, Dr. Rahul Mogale and Dr. Rajesh Reddy, focussed on the latest trends and practices in the poultry and aqua sectors. These sessions equipped the team with advanced knowledge and tools to boost product quality and operational efficiency. A standout feature was a live business session hosted by Vinod Mishra, AGM-Sales (North & South) and Amit Debnath, Zonal Manager-Sales (Eastern India, Nepal & Bangladesh) which engaged all participants.

Abir Mukherjee announced promotions and awards, highlighting Glamac's commitment to talent development and excellence recognition.

The meet concluded with a fun-filled evening celebrating achievements and looking forward to future challenges and opportunities.

GrinMicro's West Bengal Seminar

On 27th April, GrinMicro Bioscience Pvt. Ltd. organised a technical seminar at Midnapore. This was the culmination of the visit to West Bengal by Dr. P. Linge, Founder & CEO and the team from GrinMicro.

Gautam Bhadra, GrinMicro's General Manager, extended a warm welcome to the attendees and briefly outlined GrinMicro's role in advancing poultry health, nationwide.

Dr. P. Linge addressed the gathering of poultry producers and industry stalwarts. The focal point of his presentation was on "Balancing Protein Consumption for Optimal Flock Health and Production Efficiency." Dr. Linge also spoke about World Veterinary Day and paid tributes to the Father of the Indian Poultry Industry, Late Padmashree Dr. B. V. Rao.

GrinMicro Bioscience is involved in the development of high-tech poultry feed solutions. Using state-of-the art bioscience, the company creates customised feeds specifically for poultry, aimed at maximising growth, enhancing immunity, and promoting the overall health of poultry animals. GrinMicro prioritises sustainability, infusing eco-friendly practices throughout its production methods. This commitment not only benefits animal welfare but also plays a crucial role in environmental conservation efforts.

Venkateshwara BV Bio-Corp Organises Technical Seminars in Bangladesh

Venkateshwara BV Bio-Corp Pvt. Ltd. from India and Nature Care Manufacturing Industry Ltd. from Bangladesh recently collaborated to host two technical seminars aimed at commercial layer farmers. The first seminar was organised on 22nd April at Dhamrai, followed by another on 23rd April at Mawna, Dhaka, Bangladesh.

The Chief Guests for the seminars were Joyanta Kumar Deb, Managing Director, Nature Care Manufacturing Industry and Dr. Md. Emranul Haq Mondal Shapon, a renowned consultant in poultry and dairy feed formulation.

Dr. Sanjay Deshpande from Venkateshwara BV Bio-Corp delivered an insightful presentation during the seminars. He elaborated on the intricacies of "Commercial Layer Management" and emphasised the significance of balanced nutrition in enhancing productivity among commercial layers while optimising production costs. He highlighted the efficacy of Venky's 5% Eggxtra Composite Premix in providing a convenient solution for formulating balanced feed tailored to the birds' requirements. Dr. Deshpande underscored the importance of maintaining quality standards when selecting various feed ingredients.

Key highlights of Dr. Sanjay Deshpande's presentation are:

- Importance of brooding management as a foundation for preparing better pullets
- Importance of body weight monitoring in rearing period and its impact on laying productivity
- Benefits of good uniformity for good egg production and consistency
- Early Laying Nutrition to maximize peak production
- Benefits of phase feeding – to reduce the overall egg production cost and to provide the nutrients as per requirement of the birds age, egg production, egg weight, egg shell quality etc.
- Importance of water management and its impact on gut health
- Maintaining the egg shell quality during post peak production period
- Proper summer management practices to minimize the heat stress and its impact on egg production and mortality
- 5% Eggxtra Composite Premix is an innovative premix helping to produce balanced feed in an easy and simple way. It also helps to avoid the errors occurring during weighing, batching and mixing processes of feed production
- 5% Eggxtra Composite Premix is capable of optimizing the cost with highest efficiency at the farm level

An extremely interactive Q&A session followed the presentation. Md. Mahbub Alam, Manager, Nature Care Manufacturing Industry proposed the vote of thanks. Dr. Faiz Khan Rakib, Technical Manager (Sales) worked with the Venky's and Nature Care teams to organise the seminars.

PhyGeno's Session with Dr. Mathew Clark in Dhaka

PhyGeno, a 2022 born phytogenics company from the house of Keggfarms, Avitech and Indovax recently conducted a seminar in Dhaka, Bangladesh on "Improving Poultry Feed Performance". The seminar was organised jointly with Avitech Nutrition.

With Dr. Matthew Clark, Managing Director, FeedGuys Resources as the key speaker, the seminar attracted a participation of approximately 120 persons from across the Bangladesh poultry industry. Dr. Avinash Srivastava, DGM-Science & Technology, Avitech Nutrition and Dr. Sateesh Chauhan, Vice President – R&D, Avitech Nutrition also made presentations.

The welcome address and company overview were delivered by Rahul Kapur, Managing Director, Avitech Nutrition. The vote of thanks was proposed by Arjun Vohra, CEO, Avitech Nutrition.

The seminar was also attended by Ishaan Dev Kapur, Vice President – Sales, Avitech Nutrition, Debashish Choudhury, AGM – International Sales, Avitech Nutrition and Balaram Bhattacharya, Chief Sales Officer, PhyGeno.

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Immeureka's Technical Sessions in Haryana and Punjab

Immeureka Animal Health, a startup in the poultry industry, hosted technical sessions on 26th and 27th April at Kanina (Haryana) and Zirakpur (Punjab) respectively. The aim of the conferences was to equip veterinarians, poultry farmers, and feed millers with essential insights on two crucial topics, "Managing Mycotoxin and Pesticide Residue in Poultry" and 'Premix Solutions for Laying Birds."

The events began with Sarwar Ali welcoming the guests and providing a concise overview of Immeureka. He also introduced the company's product portfolio to the attendees.

Dr. Rajesh Kokje elaborated on the detrimental effects of mycotoxins and pesticide residues in poultry feed on production and elucidated on the necessary control measures. He discussed innovative solutions like Xpel, an algae-derived diatomite that effectively binds mycotoxins and pesticide residues in feed, alongside Xpel Spectra, which bends diatomite, HSCAS, and yeast extract to target multiple mycotoxins and pesticide residues while bolstering immunity and intestinal health.

Sarwar Ali underscored the significance of premixes for laying birds, highlighting Potenza as a comprehensive solution comprising tributyrin, organic minerals (Mn, Zn, Cu, Se), methionine, and prebiotics. These ingredients contribute to gut health, nutrient absorption, growth, immunity, and egg quality.

Votes of thanks were delivered by Hanumatesh, Zonal Manager for North & East and Bijoy Kumar, Regional Manager for Punjab.

Combating Protein Deficiency

In an effort to address the issue of protein deficiency in India, Poultry Federation of India (PFI) and USA Poultry and Eggs Export Council (USAPEEC) organised a session at the Press Club of India, New Delhi on 18th May. The session was attended by poultry industry experts from across the country and served as a platform to advocate for enhanced protein consumption, particularly through chicken, duck, turkey and eggs.

PFI and USAPEEC have recently signed an MoU for partnership in promoting poultry protein.

Speakers at the session were Ranpal Dhanda, President, PFI; Ricky Thaper, Treasurer, PFI; Pratibha Dixit, Nutritionist/ Dietician, Artemis Hospital; Dr. Jeetendra Verma, President, World Veterinary Poultry Association; Dr. Ajit Ranade, Vice President, World Veterinary Poultry Association and Shiven Khanna, USAPEEC.

Speaking at the session, Ranpal Dhanda said, "We're glad to collaborate with USAPEEC to raise awareness about the health benefits of poultry products. Through the combined knowledge, our objective is to amplify understanding regarding the nutritional benefits of poultry products and elevate the standards of health and wellness."

Dr. Jeetendra Verma explained the goodness of chicken meat. He said that chicken meat is a high-quality protein containing all nine essential amino acids in right proportions. It's a lean protein with high nutrient density. This means it provides essential vitamins and minerals also including B complex vitamins, selenium, phosphorus and niacin. Chicken protein also helps in muscle management and growth, hence it is very popular and essential for athletes and individuals looking to building muscle mass.

Ricky Thaper added that chicken meat and eggs are perceived as healthier alternatives to red meat, driving up demand. Poultry products are often more affordable than other protein sources, making them accessible to a broader segment of the population. He further said that in the post COVID 19 phase, the demand for protein-rich food like poultry meat and eggs has increased sharply. The growing awareness regarding health and wellness is further driving the demand for a protein-rich diet.

Pratibha Dixit emphasised the imperative of raising awareness about protein's significance in daily nutrition. She stressed the need for educating individuals on appropriate protein intake levels and the diverse sources of protein available in the diet. Poultry products emerged as standout examples of complete and bioavailable proteins, offering a comprehensive nutritional profile essential for overall health.

Further elucidating the nutritional merits of poultry protein, Dr. Ajit Ranade emphasized its role as a complete protein source. Highlighting the goodness of healthy proteins, fats, and micronutrients inherent in poultry products, he underscored their efficacy in bolstering immunity and overall well-being.

The session provided attendees with an opportunity to delve deeper into the nuances of protein consumption and its implications for public health. Discussions revolved around strategies to enhance awareness, promote dietary diversity, and expand opportunities for poultry products.

Nandus Forges Partnership with Anup Sridhar Badminton Academy

Bangalore based Nanda Group, represented by its flagship brand Nandus is recognised as one of the country's pioneering, vertically integrated poultry and meat companies. Nandus recently signed a three years agreement with Anup Sridhar Badminton Academy for sponsoring Prerana Seth (18 years) and Geto Sora (8 years), both national champions and two of the most promising stars of badminton in the country.

Badminton players require optimal nutrition to sustain energy, build muscle, and enhance overall fitness. High-quality protein sources such as chicken and eggs play a very important role in this. Nandus, being in the business of providing good, healthy and natural protein, sees itself as an important stakeholder in the development of sportspersons and hence the brand association.

The association is also a reflection of the love for badminton shared by Nanda Group Founder, P. S. Nanda Kumar and his sons, Naveen Pasuparthy and Narendra Pasuparthy.

A communiqué received from Nandus states, "Over the next three years, Nandus will be standing by Prerana and Geto, providing them with all resources needed to play competitive badminton, nationally and internationally. Nandus commitment goes beyond business. It's all about nurturing young talent and protein, fostering a spirit of excellence and contributing to a fit and healthier, competitive sports community".

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Launch

NUQO Launches in India

European feed additive company, NUQO launched its footprint into the Indian market recently through its affiliate NUQO India Pvt. Ltd. with industry veteran Neeraj Kumar Srivastava at its helm.

NUQO has been on a mission to expand its global distribution network and has established regional distribution hubs in Thailand and Mexico.

Speaking about the latest development, Ewenn Helary, CEO of NUQO said "We are thrilled to launch NUQO in India, a large yet demanding market. Two key factors enabled this launch: our offering of technologies with exclusive features that create genuine value for customers, and the opportunity to welcome onboard exceptional colleagues. This milestone underscores the merit of our strategic approach and our ability to execute it successfully as a team."

According to Srivastava, "Throughout my career, I have cultivated an extensive network and deep market knowledge in India and neighbouring countries. I have played pivotal roles in the development of major businesses in animal nutrition within the Indian subcontinent. I strongly believe in the value of NUQO's technologies and our team's capability to deliver these solutions sustainably and effectively to the Indian market. Our objective is to address the key needs of the market and our customers, and we believe that NUQO's science and research-based technologies are ideally suited for this purpose."

"The establishment of NUQO India enhances our local presence in India, allowing us to better serve our customers in this rapidly growing market and address their specific needs," said Guillaume Etave, Global Sales Director of NUQO. "It also strengthens our capability to form strong strategic partnerships and fully leverage the unique business opportunities presented by this dynamic market."

Announcement

Mahadev V. Koushik Retires from Avitech

After over 25 years of pivotal leadership at Avitech, Mahadev V. Koushik, President of Sales, has decided to retire. Since 1998, Koushik has steered the sales division, playing a crucial role in transforming Avitech into a premier supplier of premixes and feed additives, not only in India but in various markets across the globe as well.

The exceptional standards of professionalism within the Avitech team are largely attributed to his unwavering commitment to excellence.

Mahadev V. Koushik will continue to impart his invaluable expertise as an advisor to the company

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