USAID-Funded Project Recognizes Eight Organizations For Leadership

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• L-Threonine
• L-Tryptophan
• L-Valine
• L-Isoleucine

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• Monocalcium Phosphate (MCP)
• Sodium Bicarbonate
• Premix (Layer)
• Premix (Broiler)

• Choline Chloride (CCL)
  Liquid 75% /Powder 60%
• Toxin Binder
• Beetain Hcl
• Acidifier
• Phytase
• Multienzyme

• Chlortetracycline (CTC)
• Tylosin Phosphate 10%
• Tiamulin10,45,80%
• Vitamin A,C,E,K3,D3,B3,B4

• Soyabean Meal
• Fish Meal
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On March 07, 2023, Lachance Group (Shandong Longchang Animal Health Products Co., Ltd., China), organised Salon Event “Feed Efficiency Optimization and Liver Health Technical Forum” at Hotel Richmond, Bangkok, one day before VIV Asia Exhibition. This seminar was attended by poultry, dairy, and aqua industry delegates from Turkey, Egypt, Kenya, Indonesia, Australia, Malaysia, China, India besides Thailand. Ms. Bonnie Li, General Manager of International Department, Lachance Group welcomed all the delegates and gave brief introduction about Lachance Group, the largest Bile Acids production base. The product “RUNEON” bile acid is for the improve fat digestion and absorption and protects liver. “RUNEON” for Poultry is marketed by INTAS Pharmaceuticals Ltd., in India. During this technical forum, Professor Zhao Ruqian from China gave her presentation on “Liver Health and Homeostasis Regulation”. Dr. Usama Taha, Director, Dakahlia Group from Egypt spoke on “Farm Management and Slaughter Performance”. Professor Orapint Jintasataporn from Thailand gave her presentation on “Trend of Aquaculture in Thailand”.

Dr. Yumin Bao from Australia spoke on “Reduced Protein Diet and Bile Acid Application in Australian Broilers”, Mr. Ricky Thaper gave the presentation on “An Overview of Indian Poultry Industry”. There was good interaction among Speakers and Delegates during the panel discussions. Mr. Yongcun Xu (popularly known as Fred) and other Team members from Lachance Group extended warm hospitality to all the delegates attending this Salon Event which was followed by cultural and musical program with drinks and dinner. All delegates appreciated Lachance Group Salon Event as it was good networking and nice to interact with delegates from different part of the World.

VNU Asia Pacific announce the new strategic partnership with the ITEC on ILDEX Vietnam

VNU Asia Pacific is delighted to announce the new strategic partnership with the “International Technology Exhibition and Events Joint Stock Company” (ITEC) on ILDEX Vietnam from the 2024 edition onward.

ITEC is a professional international exhibitor organizer with over 10 years of experience in organizing specialized exhibitions in various industries and also has been acting as the exclusive representative of Messe München GmbH, Germany in Vietnam since 2009. For the upcoming ILDEX Vietnam 2024, ITEC will be taking the role of the exclusive co-organizer in Vietnam and solely responsible for sales and operations of the show in Vietnam. VNU is excited and confident with the growth of ILDEX Vietnam in the coming years under this new partnership.

ILDEX Vietnam 2024 is scheduled 29-31 May 2024 at Saigon Exhibition and Convention Center (SECC) in Ho Chi Minh City. The exhibition will provide a comprehensive overview of the swine industry in Vietnam, which has seen tremendous growth over the years. With over 100+ exhibiting companies from more than 30+ countries, ILDEX Vietnam is the perfect platform for exhibitors to showcase their latest products and services and for visitors to learn about the industry’s latest trends and innovations. VNU Asia Pacific and ITEC believe that with your close cooperation, ILDEX Vietnam 2024 will be a great success.
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Managing Director of Ashu Breeding Farm

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April 2023 | 7
Application of Probiotics for High-Producing Laying Hens

Wouter Van der Veken, Global Product Manager Feed Additives, Huvepharma.

When probiotics are discussed in general literature, much of the work has focused on applications in broilers. This is not very surprising, as setting up trials in animals with a short production cycle can be done quite cost-efficiently. Simultaneously, it is straightforward to understand why supporting the gut health of rapidly growing chickens is important, as their digestive system is running overtime and thus needs all the support it can get. Coupled with specific uses of certain probiotics, such as Clostridium perfringens mitigation by certain strains of Bacillus licheniformis, the value proposition of probiotics in broilers is quite clear.

Unfortunately the focus on developing feed additives for broilers has also translated in a limited number of options for producers of other types of poultry. In Europe for example, there are only a handful of probiotics registered for use in laying hens during egg production. However, the application of probiotics in layers should not be neglected: high-producing laying hens also need to be as efficient as possible, which includes utilising their diet to the fullest whilst withstanding health challenges.

The value of probiotic supplementation in laying hens

From that perspective the importance of a proper functioning gastrointestinal tract cannot be neglected, indicating the value a probiotic supplementation can bring in a layer operation.

One of the more recent additions to EU-registered layer probiotics is B-Act, a probiotic based on a single strain of spore-forming Bacillus licheniformis. The probiotic already has a long and extensive history in animal production, supporting high-performing animals during all stages of production. Recent research has now showed the unique B. licheniformis strain’s benefits in layers, resulting in a zootchnical feed additive registration in the EU.

The probiotic’s mode of action is based on the principle of competitive exclusion, including outcompeting undesirable bacteria in terms of nutrients and space, as well as producing potent antimicrobial metabolites with a strong affinity for undesirable bacteria such as Clostridium perfringens.

As a result, the chickens gut health is supported which translates to an improved feed utilisation, thereby reducing secondary issues such as wet litter and dirty eggs. The above has been confirmed in recent work by Ceylan et al. (2022). Lohmann Brown layers were supplemented with B-Act between 25 and 45 weeks of age and compared to a control fed a standard commercial diet. Per pen the body weights, feed conversion ratios, egg masses and the ratios of cracked and dirty eggs were recorded.

Additional egg quality parameters were evaluated in four-week intervals for each pen using four representative eggs, looking at shell weight, shell thickness and shell breaking strength. Protein levels in the dry manure were recorded at the start and at the end of the experiment as well, as an indication of how well the animal was using the supplemented diets. Adding B-Act to the diet of these high-performing layers significantly improved FCR and egg mass (Fig. 1. P<0.05) as well as shell percentages. The improvements in the latter parameter could offer an explanation why almost all other eggshell qualities improved numerically as well for the probiotic group (lower percentage cracked/dirty eggs and higher shell breaking strength).

At the same time, significantly less protein was excreted in the dry manure by the B-Act group compared to the control. This can be interpreted as a better functioning of the gastrointestinal tract, thus utilising the provided nutrients from the diet as much as possible, in turn leading to the improved FCR and egg parameters.

Conclusion

From the peer-reviewed research it is clear that B-Act has a place in layer nutrition, as these high-performing animals should be supported from start to finish. With an attractive return on investment and the supporting research about its benefits in layers, B-Act offers an interesting solution to do so – combining economics with health standards in the most rewarding way.

To know more, please contact Huvepharma technical team

42, 'Haridwar', Road 2 A/B, Kalyani Nagar, Pune 411006
Customer Care Contact: +91 20 2665 4193
Email: salesindia@huvepharma.com
Website: www.huvepharma.com
We understand that 70% of production comes from the animal diet and that is why it is important to make sure that the gut is in a well-balanced state, ready to combat pathogens and ensure maximum growth.

PROVENIA is a coated blend of organic acids which is formulated to effectively reduce pathogenic bacteria and manufactured using a patented embedded matrix technology to make sure that the acids are released at the right place and right time inside the gut. This helps promote a balanced microbiota to provide good gut health and cost-effective performance enhancer.
The first-ever Annual Report stemming from the Observatory of the World Organization for Animal Health (WOAH) provides an encompassing view on the implementation of international standards on animal health and welfare by its Members. WOAH international standards provide guidance on a wide range of aspects related to disease prevention and control, animal welfare and veterinary public health. They also contribute to ensuring the safe and fair international trade of animals and animal products. With these goals in mind, our Organization regularly draws on the latest advances in science to make sure that our standards are relevant, accurate and up to date. However, translating these standards into national legislative frameworks is not always easy for policymakers, who may face various challenges pertaining to their local context. Then, how do we know the extent to which these measures are being implemented? How can we identify and address the hurdles met by Members along the way? And how can we improve our practices to better support our Membership?

WOAH launches the first-ever Observatory Annual Report, which provides some valuable answers to these questions. A major endeavour of the Programme, the Report gives an insight into the implementation of a broad selection of WOAH standards. The document includes more than 100 indicators grouped into twelve sections. Each of them dives into a different topic and area of interest, from emergency preparedness to the One Health approach. Findings presented in this Report outline for the first time a global perspective of Members’ adherence to standards. At the same time, they raise awareness of some of the current gaps in their implementation. The report also suggests how they could be filled by improving practices at the national level and how Members could benefit from more tailored support.

The Observatory was launched to make sense of an ever-increasing flow of information and represents today a key component of WOAH’s digital transformation. To do so, the programme measures capabilities and performances, carries out analyses and draws conclusions from the gathered information. Data is collected from multiple sources relevant to the selected standards, analysed and compiled in the form of Annual Reports. Worthy of note in this first edition of the Observatory Annual Report are the recommendations outlined at the end of each section. Targeting WOAH’s activities as well as national Veterinary Services and Aquatic Animal Health Services, these recommendations are meant to advance expertise, build knowledge and help Members advocate for the optimal integration of WOAH standards into national legislations. Their goal is to make Animal Health Services better equipped to deal with existing challenges. The report’s recommendations are also valuable inputs for the Organisation itself, as they will enable WOAH to deepen its understanding of the implementation of standards across regions, maximise its support to them and inform its future work on data collection and analysis.
SWISS ANTIBIOTICS & PREMIXES

- Layer / Broiler
- Vitamins & Other Premix
- Amoxicillin
- Ciprofloxacin
- Doxycycline
- Albendazole
- Fenbendazole
- Lincomycin
- Azithromycin
- Tiamulin 10%/45%/80%
- Oxytetracycline
- Enrofloxacin
- Tetracycline
- Levofloxacin

VITAMINS
- Vitamin - C
- Vitamin - A/D3
- Vitamin - A
- Vitamin - B4
- Vitamin - B5
- Vitamin - E
- Vitamin - D
- Vitamin - K

AMINO Acids
- DL-Methionine
- L-Threonine
- L-Lysine HCl
- L-Tryptophan
- L-Valine

POULTRY SUPPLEMENTS
- Toxin Binder
- Choline Chloride (CCL)
- Chlortetracycline (CTC)
- Betain HCl
- Tylosin Phosphate 10%
- Acidifier
- DCP (Dicalcium Phosphate)
- MCP (Monocalcium Phosphate)
- Sodium Bi Carbonate
- Layer Premix
- Broiler Premix

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Better animal performance

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Poultry is been considered one of the fastest growing segments in animal husbandry and has taken a shape of well-organized industry over a period that accounts for about 80% of total poultry market. However, 20% unorganized segment plays crucial role in sustainable rural livelihood and suffice nutritional needs of needy. In organized segment, due to high pressure on performance, each moment of poultry life cycle has become important and is being dealt with a highest level of scientific approach. Huge number of efforts are made by consultants, feed formulators, feed millers and farmers to provide best possible nutrition to avoid any health hazards to poultry. In the same context, ration is designed with high nutritive value ingredients, growth promoters, performance enhancers, toxin binders, supplements, and additives.

In this process, usage of anti-microbial agents has been dominating in poultry feed formulation from decades not only to ensure prevention against various diseases conditions but also to obtain better growth and productivity. A wide and indiscriminate use of antibiotics at lower dosage as growth promoters has resulted in developing resistance in pathogens pertaining to poultry and human population. Many new diseases have emerged in last few years and immunity of birds has been challenged time to time. Limitation of antimicrobial usage is not only resistance development but also to deal with harmful effect while metabolising the drugs in the body.

Majority of issues which poultry producers facing constantly are related to gut health maintenance. Pathogenic problems like Necrotic enteritis, Salmonellosis, E. coli, Campylobacter etc. and non-pathogenic issues like non specific loose dropping, heat stress, disintegration of gut lining are most crucial. Banning AGPs in poultry exhibited higher feed intake, poorer feed efficiency, lower weight gain, higher mortality, raised risk of contamination and disease, inferior immune response. Hence, it is an elementary essential to have an alternate solution which can help poultry to overcome from above stated complications despite replacement of AGPs. To meet global demand of this context, to match customer preferences and to improve efficiency, many substitutes are evaluated Mono-easters, Probiotics and post biotics, Lysozymes, Lactoferrins, Avidins, Feed Acidifiers, Nucleotides, Bacteriophages, Ozone (O3), H2O2, Essential oils etc. These next generation nutraceuticals not only help in sustaining growth pattern and reducing dependability on toxicological chemical substances but they also do not allow resistant to develop against them. Hence, these natural solutions ensure safe and sustainable use.

Looking into history of Gut health management, gut acidifiers were launched in early 80s which further improved with coated form. Farmers started using coated salts of butyric acid. Different fatty acids have
diverse roles in affecting the immune system and antibacterial activity, and no single dietary fatty acid is suitable for improving overall gut health. But even after using all these solutions and looking at market challenges, Poultry industry is experiencing a gap in performance. In the similar context, Fortibac is a next generation nutraceutical with responsible approach gut health management.

Fortibac is optimal combination of monoglycerides of selected SCFA and MCFA for full spectrum balanced efficacy. The molecules of fatty acids are chemically bound to glycerol to form monoglyceride. It is a covalent bond and this bond does not dissociate in gut (outside bacterial cell) which makes Fortibac pH independent and its antibacterial effect is seen in entire GIT.

pKa value of fatty acids (ranging from C1 to C12) is between 3.75 to 5.30 which means all these fatty acids dissociate their 50% of molecules between 3.75 to 5.30 pH range.

<table>
<thead>
<tr>
<th>Number of carbon atoms</th>
<th>Acid</th>
<th>pKa</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>formic</td>
<td>3.75</td>
</tr>
<tr>
<td>C2</td>
<td>acetic</td>
<td>4.76</td>
</tr>
<tr>
<td>C4</td>
<td>butyric</td>
<td>4.81</td>
</tr>
<tr>
<td>C5</td>
<td>valeric</td>
<td>4.86</td>
</tr>
<tr>
<td>C3</td>
<td>propionic</td>
<td>4.88</td>
</tr>
<tr>
<td>C6</td>
<td>capronic</td>
<td>4.88</td>
</tr>
<tr>
<td>C8</td>
<td>caprylic</td>
<td>4.89</td>
</tr>
<tr>
<td>C10</td>
<td>capric</td>
<td>4.90</td>
</tr>
<tr>
<td>C9</td>
<td>pelargonic</td>
<td>4.96</td>
</tr>
<tr>
<td>C12</td>
<td>lauric</td>
<td>5.30</td>
</tr>
</tbody>
</table>

Moreover, above pH 5.5 level dissociation of organic acids reduces to less than 10% level very low. While, Fortibac is pH independent and dissociates organic acids in the bacterial cytoplasm is observed 20 times higher than encapsulated acidifiers (like Ca butyrate) at pH 6.5.

AGP have non-specific approach against pathogens and probiotics but Fortibac has expressed its efficacy against pathogens and supporting functions on probiotic colonization. Hence, Fortibac is a revolutionary solution for increasing overall poultry performance.

Fortibac majorly has three types of functional efficacy.
1. **Microbiological effect:**

- Fortibac reduces intracellular pH of bacterial cell which is 15-20 times more effective than organic acids.

- Fortibac actions are pH independent hence ensures efficacy in intestine where pH is 6.5-7.0 which ensures better digestibility and absorption of nutrients. Organic acids are nearly ineffective at this stage or if they reduce intestinal pH, bird’s performance will be compromised.

- Fortibac selectively damages bacterial cell wall by increasing its permeability and changing intracellular osmotic pressure, that is why it is better than antibiotics.

- Fortibac is highly effective against Clostridium, Campylobacter, Salmonella & E coli.

- Fortibac is also proven against subclinical and mild necrotic enteritis.

2. **Epithelial effect:**

- Fortibac ensures intestinal wall integrity.

- Fortibac helps in improving digestion process.

- Fortibac supports better nutrient and ion absorption.

- Fortibac is also used as source of energy for epithelial cells.

- Fortibac helps to improve villi surface area for better probiotic colonization.

3. **Immunological effect:**

- Fortibac improves first immunological barrier and repairs leaky gut situation by tight junction protein synthesis.

- Fortibac has anti-inflammatory situation by inhibiting LPS production by bacteria and reduced production of inflammatory cytokines by macrophages.

- Fortibac helps in releasing antimicrobial peptides by intestine (Paneth cells).

Active ingredients of Fortibac directly induce bacterial cell lysis in gut lumen (that means lower amount of released LPS by pathogens) and indirectly promote the Paneth cell to produce antimicrobial peptides. Fortibac also stimulates the gene expression for tight junction proteins production and increases intestinal wall integrity. Fortibac active substances prevent the excessive activation of macrophages and their production of proinflammatory cytokines resulting in immunomodulating effect.

Fortibac has been proven its effect in breeder, layers and broilers in different conditions. Fortibac can be considered one of the best solutions among alternative to antibiotic growth promoters.
The powerful probiotic strain screened and isolated from the chicken gut

- **>100 g**
  Improvement in BWT over control

- **>45 g**
  Improvement in BWT over existing formulation and competition

- **100 units**
  Improvement in FCR over control

- **40 units**
  Improvement in FCR over existing formulation and competition

- **>30%**
  Improvement in liveability over control

ZMT02 strain
Key advantages

The key to total gut integrity

Zenex AH was formerly Zydus AH
After a hugely successful series last year, Trouw Nutrition India organized the first series of Trouw Talks for 2023. The series included two seminars at Karnal on 20 March 2023 and in Hyderabad on 23 March 2023. Focusing on how innovations are a necessity to revolutionize the Animal Nutrition. It was a successful event witnessing the enthusiastic interactions from various Integrators, Consultants and Feed Millers.

The delegates were welcomed by Dr Rajeev Sharma, Regional Sales Manager – North India and Ms. Shilpi Agarwal, Brand Manager in Karnal and Hyderabad respectively. Post which Dr. Sachin Ingewar, Director-Feed Additives, and Dr. Chandani Parihar, Head - Marketing, took the audience through the journey of Trouw Nutrition and explained the need of technological interventions in today’s critical scenario and how innovation can sustainably Feed the Future amid growing population and depleting resources.

Keynote speaker, Dr. In-Sun Yu, Regional Program Manager – Trace Minerals, TN Global addressed the audience on the Next Generation of Mineral Nutrition. She discussed about the different form of minerals and the impact of bond strengths in various parameters. She further discussed about the innovative, next-generation Intellibond. These hydroxy minerals are well known for their stability and bioavailability. Key Highlights from her presentation are:

- To fulfill the nutritional requirement of trace mineral of animals, it is important to understand the biochemistry of minerals to balance the feeding level with amount of metal delivered in blood stream.
- Different sources of mineral have different bioavailability which is based on the bonding structure.
• Intellibond’s Optisize technology, a patented technology, ensures uniform blending, improved handling, non-hygroscopic, non-reactive particles for better stability, improved performance and results.

• Intellibond is proven to give enhanced performance and better results in both layers and broilers.

Second Keynote speakers for the session were Mr. Melchior de Bruin, Development and Deployment Manager, TN Global and Dr. Sangeeta Singh, Global Business Director- Phytogenics, TN Global. They addressed the audience about harnessing the power of plants and how latest developments in pytogenics can be used to improve the performance of animals. Key highlights from the presentation are:

• Our new lens of phytogenics helps us to use phytotechnology to target the animal instead of pathogens since phytogens can only act on pathogens at a very high dose.

• When selecting the right product and right phytogens, the complete knowledge of plants is important and so is the knowledge of various extraction method.

• Quality control is essential for phytogenic product as variation can exist even within a plant.

• Fytera Perform, our latest innovation, is the result of well documented research and careful selection that supports improved efficiency, body weight and carcass yield in broilers.

Session was followed by an interactive discussion and vote of thanks by Dr. Rajeev Sharma and Mr. Praveen Vangoor, Regional Sales Manager – South India, for the enthusiastic participation by all the attendees and insightful presentations by the panelists.
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The International Poultry Council (IPC) is pleased to announce eight private-sector organizations have recognized the importance of responsible antimicrobial use and are endorsing the council’s antimicrobial use stewardship principles. Advanced within Transformational Strategies for Farm Output Risk Mitigation (TRANSFORM), a USAID-funded activity led by Cargill, the principles guide poultry farmer actions to avoid the need for use of antimicrobials, yet when needed, ensure they are used according to stewardship principles.

These international leaders, representing over 15 percent of the global broiler production, include six associations and two companies, and together they represent a collective effort in reducing reliance on antimicrobials globally. These organizations are recognized as leaders for adopting the antimicrobial use stewardship principles and serve as an example for others that want to make a tangible impact on global health security.

- Brazilian Association of Animal Protein (ABPA)
- Federación Nacional de Avicultores de Colombia (FENAVI)
- Poultry Federation of India (PFI)
- Unione Nazionale Filiere Agroalimentari Carni Uova (UNAITALIA)
- Thai Broiler Processing Exporters Association (TBA)
- Vietnam Poultry Association (VIPA)
- DABACO Group, a Vietnam-based company
- Kenchic Limited, a Kenya-based company

“Critical actions for addressing antimicrobial use start at the farm,” said Robin Horel, IPC president. “We commend these organizations for acknowledging the importance of intentional antimicrobial use not only for the benefit of animals, but for the impact on human health by reducing the risk of resistant pathogens spreading around the world.” By adopting the principles, the organizations are committed to encouraging or taking action that centers around four key points. First, taking a risk-based approach to understand specific use of antimicrobials. Second, adopting management practices to reduce the need for antimicrobials. Third, using antimicrobials only in compliance with national authorizations and finally, that antimicrobials critically important for human medicine should be used for therapeutic purposes only and under a supervising veterinarian’s diagnosis and oversight.

“We know that human health is linked with the health of animals,” said Annie Kneedler, Chief of Party for TRANSFORM. “When we take a systems-based approach to reconsidering our antibiotic use, we’re able to create an ecosystem where animal health improves, animal production increases and reliance on antibiotics decreases. These collective efforts contribute to broader global food security goals that can only be achieved by working together.”
This is the latest initiative from TRANSFORM, a project created to advance market-driven animal health solutions that increase global health security and increase access to safe and affordable animal-sourced nutrition. Led by a private-sector consortium that includes Cargill, Ausvet, Heifer International and IPC, TRANSFORM aims to drive lasting, systemic change through animal health data applications, antimicrobial use stewardship and on-farm practices that support animal health and economic sustainability.

About International Poultry Council

The International Poultry Council is the unified voice of the global poultry sector that represents 86% of poultry meat exports and 73% of the volume of poultry meat production. IPC works to strengthen communication between the industries of different countries, promotes a common global understanding of and confidence in poultry products, represents the global poultry sector with international organizations and agencies, shares science-based solutions and information across the whole poultry supply chain, promotes a balanced regulatory framework to support a fair global playing field and promotes, supports and encourages the sustainable development of animal production for global food security.

About Cargill

Cargill helps the world’s food system work for you. We connect farmers with markets, customers with ingredients and families with daily essentials—from the foods they eat to the floors they walk on. Our 160,000 team members around the world innovate with purpose, empowering our partners and communities as we work to nourish the world in a safe, responsible, sustainable way.

From feed that reduces methane emissions to waste-based renewable fuels, the possibilities are boundless. But our values remain the same. We put people first. We reach higher. We do the right thing. It’s how we’ve met the needs of the people we call neighbors and the planet we call home for 157 years—and we’ll do so for generations to come. For more information, visit Cargill.com and our News Center.

About Poultry Federation of India

Poultry Federation of India (PFI) is the foremost national level Organization established in the year 1988, being the voice of the Indian Poultry Industry. PFI is constantly working and committed towards the protection, welfare and the overall growth and development of the poultry sector. Poultry Federation of India (PFI) is the only national level organization in poultry representing the poultry farmers.

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- Enhances immune response.
- To improve performance.
- Corrects calcium and phosphorus metabolism.

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- 5ml / 100 Broilers or Layers for 5 - 7 days.

**Presentation:**
- 100 ml, 500 ml, 1 Ltr. & 5 Ltr.
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W: www.trouwnutrition.in
Heat stress is a major challenge in poultry production, especially during the summer months. It occurs when birds face difficulty in achieving a balance between body heat produced and heat lost. This imbalance can lead to several health issues and production losses. Therefore, it is crucial to understand the causes and responses of birds to heat stress and implement appropriate mitigation strategies to minimize the adverse impact on production. There are several causes for heat production apart from the environmental heat. Some of them notably are higher feed intake, higher density feed and/or overcrowding of birds in a limited space, etc.

Heat stress response to maintain normal body temperature:

- Increased panting - Spreading of wings - Moving toward shades or towards the place where airflow is more - Blood-swollen wattles and comb - Diverting blood from internal organ to the skin which darkens skin colour - Reduced physical activity - Lesser feed intake and drinks more water which can cause loose droppings

Impact on poultry production

Heat stress production losses depend on multiple factors like maximum temperature, duration of high temperatures, rate of temperature change, and relative humidity of the air leading to the following impacts:

- Mortality
- Feed intake
- Gut health
- CFCR
- Body weight
- Meat quality
- Immunity
- Egg production
- Egg weight
- Egg shell quality
- Albumin height
- Hatchability

Impact of heat stress on Egg shell quality

Panting due to heat stress can cause an acid-base imbalance in the blood of layers, resulting in thinner and weaker eggshell. Hyperventilation in birds to regulate body temperature leads to excessive loss of CO₂ gas from the lungs and blood, resulting in an increase in blood pH or a shift towards alkalinity, a condition referred to as respiratory alkalosis. A rise in blood pH levels reduces the activity of carbonic anhydrase enzyme, causing a decrease in the transfer of calcium and carbonate ions from the blood to the shell gland. The addition of calcium to the diet alone cannot rectify this issue. A reduction in feed intake and an increase in phosphorus loss leads to a decrease in calcium consumption, which is another factor contributing to thin eggshells. To restore acid-base balance, use of potassium chloride, ammonium chloride, or sodium bicarbonate is recommended.

Strategies to reduce heat stress in poultry

Heat stress reduction in poultry can be achieved by implementing various strategies. Two key strategies are housing management and nutritional management. Housing management involves adjusting the environment in which the birds are kept, including ventilation, temperature control, and lighting. Nutritional management involves providing birds with a balanced diet that includes specific nutrients that can help them cope with heat stress. Both strategies can be effective in reducing heat stress and maintaining performance. Monitoring the temperature and humidity at farm is a critical task during implementation of heat stress mitigation strategies.
General guide to the reaction of adult poultry to various temperatures

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 to 75</td>
<td>Thermal neutral zone. The temperature range where a bird can maintain its body temperature without any need to modify its basic metabolic rate or behavior.</td>
</tr>
<tr>
<td>65 to 75</td>
<td>Ideal temperature range.</td>
</tr>
<tr>
<td>75 to 85</td>
<td>A slight reduction in feed consumption can be expected, but if nutrient intake is adequate, production efficiency is good. Egg size could potentially decrease, and the quality of the eggshell may deteriorate when temperatures approach the upper limit of this range.</td>
</tr>
<tr>
<td>85 to 90</td>
<td>Feed consumption falls further. Weight gains are lower. Egg size and shell quality tend to decline. Egg production usually suffers. It is recommended to implement cooling measures prior to reaching this temperature range.</td>
</tr>
<tr>
<td>90 to 95</td>
<td>Feed consumption continues to drop. There is some danger of heat prostration among layers, especially the heavier birds and those in full production. At these temperatures, cooling procedures must be carried out.</td>
</tr>
<tr>
<td>95 to 100</td>
<td>Heat prostration is probable. Emergency measures may be needed. Egg production and feed consumption are severely reduced. Water consumption is very high.</td>
</tr>
<tr>
<td>Over 100</td>
<td>At these temperatures, the priority is the survival of birds, and as such, urgent measures must be taken to cool them.</td>
</tr>
</tbody>
</table>

1. Housing management

- Need to manage routine work and management practice schedule so that birds won't disturb in hotter period of day.
- Reduce the intensity of light in hot period to decrease physical activity of birds.
- Reschedule lightning program to make more morning light hours and less afternoon light hours to increase feed intake.
- Growing trees on both side of shed as well as covering of roof with Agri waste, dry coconut leaves or whitewash helps to reduce temperature.
- Installation of water tank inside the shed is preferable but if water tank outside the shed, then pandhal and whitewash for water tank required.
- Wet gunny on the side mesh to cool down the surrounding environment.
- Sprinkler on the roof and Foggers inside the shed, whereas usage should be limited in case of high humidity in the air.
- Fans & foggers start before 1 hour of heat increment and stop 30 minutes after panting stops. Run the foggers for 2 minutes every 20 minutes.
- Clean drinkers & flush out water from pipeline frequently in nipple system. Additionally, maintaining the appropriate height, pressure, and water flow (> 70 ml/minute/nipple drinker) of the nipples is also crucial.
- Water pipeline should be covered with gunny bag or Agri waste, underground pipeline is desirable during farmhouse construction.

Increasing space to avoid overcrowding of birds or Removing 20 to 30% birds after 30 days in broiler to avoid heat stress mortality in birds having higher body weight.

2. Nutritional Management

- Feed distribution at early morning & evening time (Cool part of the day) to increase the feed intake. Normally 1/3 part of feed in early morning and 2/3 part in evening to maintain eggshell quality.
- Feed intake can be increased by wet mash feeding and crumble or pellet type feed with the addition of fat or molasses to increase palatability.
- Mash feed is preferred in broiler during extreme heat stress if feed is offered ad-libitum and removal of feed is not possible to prevent mortality in higher age of production cycle (age >30 days).
- Withdrawal of feed (9 am to 4:30 pm) before anticipated time of peak temperature.
- Feed should be made denser with nutrients, vitamins, and minerals to compensate for reduced feed intake.
- Usage of vegetable or highly digestible protein sources in feed is recommended.
- Formulate to digestible amino acid targets and do not apply a high crude protein minimum in the formula. Incorporation of Synthetic amino acids can reduce crude protein in the diet without limiting amino acid levels.
- Usage of Fats or oils with more saturated fatty acids are crucial to adjust feed energy concentration rather than carbohydrate or proteins, to compensate the reduced energy intake due to less feed intake during the hotter periods.
- Oils content Linoleic acid which enhances performance and egg weights as well as oil increases palatability of feed and generates less body heat as compared to carbohydrates and protein sources.
- Vit. C and Vit. E are useful in diet because of their anti-heat stress/antioxidant properties. Inclusion Level of these vitamins in the feed can be increased in summer to improve immunity.
- Betaine helps in water retention, increased anabolic activity, maintained integrity of cells during heat stress condition. Additionally, betaine enhances production performance by supplying methyl group as shown in Fig. 2.

Fig. 1 - Diagram of Thermoneutral Zone

<table>
<thead>
<tr>
<th>Lower Critical Temperature:</th>
<th>Upper Critical Temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermoneutral Zone - normal behaviour regulates heat</td>
<td>Heat related welfare problem probable</td>
</tr>
<tr>
<td>Fast panting, Physical tiredness</td>
<td>Birds can't control body temperature</td>
</tr>
<tr>
<td>Heat problem exists</td>
<td>Death from heat</td>
</tr>
</tbody>
</table>

Increasing ambient temperature

- Mineral excretion increases during summer that’s why mineral premix dose need to increase 1.25% in feed formulation.
- Inclusion of hydroxy trace minerals like Intellibond to improve egg production and reduce cracked eggs.
- Supplementation of IntelliOpt, an optimal combination of hydroxy (Intellibond) and chelated (Optimin) trace mineral technology, at appropriate inclusion levels, has proved to enhance poultry performance in heat stress conditions as shown in Fig. 3.

![Fig. 2 - Effect of betaine on broiler performance](image)

- Availability of cool water with increased number of waterers in which electrolytes (Potassium chloride, ammonium chloride or sodium bicarbonate) and ice cube prepared from chlorinated water can be added.
- Summer layer diet should have ≤250 mEq/kg dietary electrolyte balance (molar equivalence of Na+ + K+ - Cl-), whereas broiler diet like pre-starter, starter and finisher should have DEB values less than 220, 200 and 180 mEq/kg respectively.
- Use of Maduramycin as an anticoccidials in summer helps to increase water intake, whereas Nicarbazine and Monensin have negative impact.

Fig. 2 - Effect of betaine on broiler performance

- Preventive treatment for heat stress through drinking water:
  - During moderate hot weather - ascorbic acid (Vit C) 62.5 mg/L + acetylsalicylic acid 62.5 mg/L + sodium bicarbonates 75 mg/L + potassium chloride 125 mg/L
  - In heat stress- ascorbic acid (Vit C) 400 mg/L + electrolytes + acetyl salicylic acid (disprin 1 tablet/5 L) + sodium bicarbonate 1gm/L

Fig. 3 - Effect of Intellibonds on eggshell quality parameters

Conclusion

Heat stress is a major challenge in poultry production, which can lead to several health issues and production losses. Therefore, it is crucial to understand the causes and responses of birds to heat stress and implement appropriate mitigating strategies to minimize the adverse impact on production. Effective housing and nutritional management strategies can help reduce heat stress and improve poultry performance.

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Huvepharma®, a global leader in animal health has evolved its scientific direction to foray into hygiene and food safety concept in order to popularize conceptual future direction of food business. In the same context, Huvepharma® has conducted multiple hygiene & food safety seminars for Industry Technocrats across many cities like Pune, Hyderabad, and Karnal. The safest Biosecurity & Hygiene Solutions were introduced to improve poultry production and ensure food safety!

Poultry Biosecurity is a complex system that require a range of products and services to ensure efficient functioning. To make this process easier, a Huvepharma® hygiene range of products have been designed to cover each and every step of the poultry production system – It includes products for cleaning, disinfection and water sanitization at the level of Hatchery, farm, food processing units, storage units and transportation vehicles etc. to prevent any risks of contamination. This is the perfect way to make sure that your business follows the highest hygiene standards and ensure that the poultry you’re producing is safe for consumption. It also helps to reduce the cost associated with disease control, while improving overall productivity. Huvepharma® hygiene products are developed with the latest technology to provide maximum efficiency and safety for all stages of the poultry operations. They are also designed with user-friendly features so application at farm level can be easily manageable. With this product launch, Huvepharma® aims to provide producers with an integrated solution for better biosecurity management.

Huvetech Meet 2023 was a great success with an overwhelming response in Pune, Hyderabad and Karnal. It provided a platform for veterinarians to exchange their ideas and experiences on hygiene-related topics. These poultry hygiene seminars were focused on importance of farm biosecurity to improve poultry production and was attended by almost all the veterinarians from the respective regions. Technical seminars were started with welcome address by Dr. Sachin Patil & Dr. Priyanka Kamble at Pune, Karnal & Hyderabad respectively.

The events were well-received by the participants who found it to be highly informative and interactive. They were able to learn more about the importance of hygiene in animal health care as well as received tips on how to manage good hygiene practices. The event also highlighted the latest
innovations in hygiene products that can help veterinarians provide better services to the farmers and producers.

Huvepharma® has launched Prophyl 75, a new Oocysticidal in India. This product is designed to help poultry farmers and producers fight against Coccidiosis, which is one of the most important diseases in poultry, generates huge economic losses. With the use of Prophyl 75 product, it will be possible to reduce the amount of time and resources that are needed for prevention and treatment of the disease. Prophyl 75 will also help to reduce the economic losses caused by Coccidiosis. This new product from Huvepharma® is expected to revolutionize the way poultry farmers deal with this protozoan parasitic infections.

During meet Mr. Jean-Charles Banglione and experts also discussed about the challenges associated with Biofilms as well as potential solution to this challenge which is Huvepharma’s non foaming detergent and cleaner DT SMART® which has high degreasing power and breaks down all kind of dirt which helps in biofilm clearance that reduces bacterial contamination and helps to maintain healthy bird population by controlling disease-causing bacteria.

Technical seminars concluded by Mr. Abhijit Vaidya, Mr. G. Naveen Kumar & Mr. Sushil Kumar Bhardwaj at Pune, Hyderabad & Karnal respectively.

The speakers were felicitated for their efforts in providing valuable insights into poultry hygiene practices. It was a great opportunity
for the attendees to gain firsthand experience from the experts in this field.

**SPEAKERS DETAILS**

**Mr. Jean-Charles BAGLIONE**

We have invited Mr. Jean-Charles BAGLIONE from Huvepharma® France who has vast experience in the field of poultry biosecurity. In this training program he shared his knowledge with everyone present. During this session, he explained in detail the applications of hygiene products and their importance in maintaining a safe environment for poultry. His knowledge was truly remarkable and it was evident that he had an excellent understanding of the subject matter.

**Dr. M. M. Chaudhary**

Dr. M. M. Chaudhary who has conducted a session on basics of biosecurity at farm level and he is an experienced professional in the field of animal health and poultry biosecurity. In his session, he shared his practical experience on poultry hygiene and provided valuable insights that could help others understand the complexities of the field better. It was truly an insightful experience for all attendees.

**Dr. Devender Hooda**

Dr. Devender Hooda, Director - Sales and Technical, Huvepharma SEA has conducted a very insightful session on 3T Differentiation for the people who attended. During the session, many questions were asked to Dr. Hooda and he provided valuable insights into how 3T Differentiation could be used to improve poultry production. The attendees were highly impressed with the knowledge and experience shared by him during the session, making it a very informative and educational experience for everyone involved.
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<table>
<thead>
<tr>
<th>Name of the Farm</th>
<th>State</th>
<th>Week hit 90% Production</th>
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<tr>
<td>D.S.P.F</td>
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<td>23</td>
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<td>R M Traders</td>
<td>Maharashtra</td>
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<tr>
<td>Kalyyanp P.F</td>
<td>Tamil Nadu</td>
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<td>Ashok Poultry</td>
<td>Telangana</td>
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<td>Uddanam Agro Farms</td>
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<td>Velusamy P.F</td>
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<tr>
<td>Sri Venkataramana P.F</td>
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<th>State</th>
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<td>Sulabha P.F</td>
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<td>Santosh Dhanawade P.F</td>
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<td>Mulani P.F</td>
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<td>RASUL ALI P.F</td>
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<td>Shri Om Bana P.F</td>
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<td>Vijaynagar Egg Farm</td>
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<td>Mahadev P.F</td>
<td>Rajasthan</td>
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</table>

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<table>
<thead>
<tr>
<th>Measures</th>
<th>Values</th>
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<tbody>
<tr>
<td>Flock Age</td>
<td>85 Weeks</td>
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<tr>
<td>Peak Production</td>
<td>93%</td>
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<tr>
<td>Weeks Production</td>
<td>13</td>
</tr>
<tr>
<td>Weeks Above 90%</td>
<td>391.66</td>
</tr>
<tr>
<td>Hen House Eggs</td>
<td>112 g</td>
</tr>
<tr>
<td>Cumulative Feed per Egg</td>
<td>95 g</td>
</tr>
<tr>
<td>Feed Per Day (Laying Period)</td>
<td>98%</td>
</tr>
<tr>
<td>Feed Cost Per Egg Upto 85 Weeks</td>
<td>₹3.13/-</td>
</tr>
</tbody>
</table>

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28/3/2023

Hyderabad, April 2023
Whether it’s professional sports, personal fitness or leisurely activity, it is important for individuals of all ages to ensure they get the right nutrition before and after exercise. Adequate intake of vitamins, minerals and protein matters for muscle growth, endurance and overall health. Let’s explore why eggs are the perfect protein package to help fuel your fitness goals!

**Why does diet matter?**

Just like stretching, warming up and cooling down, getting the right nutrition is a crucial aspect of exercise and training. This is particularly true for what you eat AFTER a workout, where accessing key nutrients can help you speed up your recovery and build strength faster. Protein is one of the most important nutrients needed in post-workout diets. Consuming high-quality protein after exercise will help you repair muscle, revitalise energy stores and stimulate new muscle growth, meaning you will see the rewards of your hard work sooner.

While your muscles will ultimately repair themselves on their own, research suggests that eating adequate protein within two hours of training will help the body rebuild and grow muscle more efficiently and effectively.

These increased levels of protein can be particularly effective for resistance training, such as weightlifting, with the International Society of Sports Nutrition recommending more than 3g of protein per kg of bodyweight. Alternatively, for endurance-focused workouts, such as running and cycling, they advise 1.4-2.0g of protein per kg of bodyweight.

Furthermore, for the best results, it is recommended that protein intakes of 20-40g per meal be evenly distributed throughout the day, at intervals of around 3-4 hours, consumed alongside carbohydrate-rich foods and appropriate fluids.

“With growing trends in personal fitness development and gym-based resistance training, there is an increasing demand for protein-rich nutrition that’s affordable and accessible,” explains Andrew Joret, Chairman of the British Egg Industry Council (BEIC) and member of the International Egg Nutrition Centre’s (IENC) Global Egg Nutrition Expert Group.
The power of egg protein

With 13 essential nutrients, 6g of protein, just 70 calories and 5g of fat, one large egg has a unique nutrition profile that is ideal for athletes of all ages! “Eggs are the perfect ally for exercise,” says Mr Joret, “They are packed with nutrients and protein, incredibly versatile, and also easily portable for individuals who are on-the-go.”

It is not just that eggs are rich in protein, but that the protein they contain is the highest quality naturally available. The quality of protein mainly depends on the composition of different amino acids in the food, and their bioavailability to be digested and absorbed. For example, eggs contain all nine essential amino acids, making them a ‘complete protein’. Furthermore, the ratio and pattern in which these amino acids are found makes them the perfect match for the body’s needs. The protein in eggs is also highly digestible – the body can absorb and use 95% of it! Scientists have even used eggs as a benchmark for evaluating the protein quality in other foods. Read our article on protein quality to find out more.

The International Society of Sports Nutrition advise that athletes choose whole food sources of protein, like eggs, to stimulate muscle protein synthesis (MPS), a naturally occurring process in which protein is produced to repair muscle damage caused by intense exercise. They also argue that eggs can be easily incorporated into diets throughout the day as they “can be prepared with most meal choices, whether at breakfast, lunch or dinner.”

Don’t forget the yolk

“When it comes to egg white vs egg yolk, people often think that discarding the yolk will be the healthier option due to misconceptions about cholesterol and unhealthy fats.” says Mr Joret, “The problem is, when you throw away the yolk, you throw away the majority of essential nutrients and around half the protein.” The latest research confirms that eating eggs as part of a healthy diet does not have a significant effect on blood cholesterol, and therefore does not increase the risk of heart disease in most people.

Meanwhile, the protein in an egg is almost equally divided between the yolk and the white, so it’s important to include both in your post-workout diet. In fact, research shows whole eggs stimulate muscle growth and repair even more than just eating egg whites alone.

We’ve cracked it!

The secret to sourcing high-quality protein to support your exercise goals is simple... the incredible egg! “The truth is, you don’t need the next leading supplement or shake to access the highest-quality protein available – you can find it in the all-natural humble egg!” Summarises Mr Joret. “No matter what stage you are at on your fitness journey, eggs can play an important role in muscle growth, weight loss and overall health!”

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Per capita egg consumption in India has doubled in the last 20 years and increased more than a hundred times in the last 60 years.

India surpassed China as the world’s most populous country as of January 17 – a fact that we were perplexed about whether to celebrate or be concerned. This was expected to happen only by 2025, as per the projections made by the UN’s population division, but India’s rapid population growth exceeded the projections. With such rapid rates of population growth, the bigger question is – are we adequately prepared to sustain the growing population with sufficient food and nutrition?

On the same day when India became the most populous country, the Indian state Maharashtra was in the news headlines for a nutritional crisis. The state faced a shortage of more than one crore eggs per day. Many nations have faced similar egg shortages in the last two years. This is largely attributed to large scale culling of poultry due to highly contagious avian influenza and breakdown of supply chain due to the pandemic. This egg shortage can be considered as the beginning of an imminent protein scarcity. With the human population expected to increase to 9.7 billion by 2050 and 10.4 billion by 2100, this issue is only expected to worsen further.

Shortage of eggs

India is one of the world’s largest egg producing countries after China and the United States. Yet, states in India are currently facing acute shortage of eggs. The rising prices of eggs are especially alarming as eggs are the primary source of protein for many people. As per National Family Health Survey reports of 2019-2020, 74% of Indian households consume eggs. With supply being limited, the price of eggs is already on a rise, which has increased by approximately 25% in wholesale prices in India over the past year, (in Bangalore Rs 466.6 in January 2022 to Rs 565 in January 2023).

With the current levels of price inflation and shortage, the nutritional security of the country is a matter of concern. Per capita egg consumption in India has doubled in the last 20 years and increased more than a hundred times in the last 60 years. Meanwhile, per capita meat consumption still remains low, accounting for only 8% of that in developed countries and that has not changed much in the last 60 years. Additionally, other protein sources like meat, fish and plant derived ones, while available, are not as accessible as eggs.

The current shortage of eggs is due to a combination of factors like avian flu outbreak, recent heavy rains and floods and drought that hit the state. Some studies suggest that changes in temperature, precipitation, and humidity can create an environment that is more favourable for the spread of certain avian influenza viruses. For example, warmer temperatures may increase the survival rate of the virus in the environment and in wild bird populations, making it easier for the virus to spread. Additionally, changes in precipitation patterns can lead to wetter conditions, which can create environments that are more conducive to the growth of the virus. These changes in weather patterns may
also affect the distribution and migration patterns of wild birds, which can increase the chances of avian influenza viruses and other diseases spreading to new areas.

Maharashtra is one of the major egg-producing states in India and the shortage could have a ripple effect on the egg prices in other parts of the country. The state government has also taken steps to increase the supply of eggs by importing eggs from other states and countries.

**Implications of shortage**

The current shortage of eggs and avian flu outbreak can have a significant impact on the poorer sections of society. As the availability of eggs decreases and their prices rise, households that depend on them as a primary source of protein, may find it challenging to purchase enough to fulfill their nutritional requirements. This could result in greater nutritional insecurity.

Additionally, people may be compelled to search for alternative food options that are less nutritious to meet their dietary needs, resulting in reduced dietary diversity. A considerable number of eggs come from free-ranging chicken in village households, providing a valuable source of nutrition, particularly for the children and pregnant women. Nevertheless, if egg prices go up, individuals may feel pressured to sell their eggs to earn extra money, which could worsen the issue of malnutrition among children.

Poultry farmers may be heavily affected by the shortage, as they may have to cull birds or reduce production. This could lead to reduced income for poultry farmers, and in turn, increased economic hardship for their families.

As per Food and Agriculture Organization’s reports the world egg production increased by 150%, to meet with the increasing demand in the last three decades. In Asia alone there is a fourfold increase in egg production. Although increasing production might seem like a potential solution, it is not a sustainable solution and has its environmental impacts. The carbon footprint of poultry alone is 12.2 kg CO2e per kg which accounts to 10% of the global anthropogenic greenhouse gas emissions. Land and water resource requirements are also not far behind. The release of methane and nitrous oxide from manure and feed production are also a threat.

With such high emission rates, increasing production to meet the shortage will have huge environmental impacts in the long run. On top of all this, the poultry industry is one of the major contributors of antibiotic resistance in the world. The growth hormones and food additives commonly used in poultry industry has been associated with various adverse impacts on human health, including early puberty, cancer etc, and environmental concerns, such as the contamination of soil and water supplies with residual substances.

With a shortage of eggs, people will have to reduce consumption or find alternative ingredients. This calls for an urgent need to switch towards alternative sources to conventional protein – one being insects. Foreseeing this, the Food and Agriculture Organization has been promoting insects as future source of protein since 2013. While 50 g of egg provides 13 g of protein, an equivalent amount of cricket powder can give 35 g of protein. Insects in general are also rich in micronutrients and iron.

The benefits of insects over conventional protein sources have been communicated often. Insects are a sustainable alternative to conventional animal protein, with minimal resource requirements, negligible greenhouse gas emissions and faster feed conversion rate. They can be reared on a variety of substrates right from organic side streams to small bins. Since they produce a large number of offspring in a single cycle, and that too with short generation times, they are the absolute protein alternatives to address the protein crisis.

One significant question here to consider is why insects are being considered over other plant- based protein source like soybeans. The answer lies in several advantages that insects possess, including being more energy efficient, having a lower ecological and carbon footprint and minimal resource requirements. Insects also have an edge over soybeans because as they have a wide variety of essential amino acids, which are the building blocks of protein. Also, they are a good source of fat and minerals, such as zinc, copper, and iron, which are often deficient in plant-based diets. However, it’s important to note that insect farming is still a nascent industry that faces many challenges. Also, there are cultural and psychological barriers to overcome for some individuals to accept insects as food.
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Hyderabad, April 2023
Micronutrients Rebrands as Selko®

The change in name establishes Selko as Nutreco’s single global brand for specialty feed additives. Micronutrients, Nutreco’s U.S.-based feed additive company, is rebranding as Selko, effective January 2023. The change streamlines the portfolio of specialty feed additives, including IntelliBond trace minerals under a single global brand. Expanding on a legacy of research and development, Selko is investing to become the market leader in phytogenics and has established an innovation discovery group focused on specialty feed additives. “Since becoming part of Nutreco, our U.S. business has made aggressive investments in science-based nutrition offerings that go far beyond our legacy work with IntelliBond hydroxy trace minerals,” said Patrick Pilkington, Managing Director, Selko USA. “Advancements in the science of livestock and poultry production are ever evolving and as we continue investing in areas such as phytogenics and other natural feed additives, products in the Selko portfolio will continue to target the market’s existing and emerging needs.” While Selko will become the single brand serving customers around the globe, the people, product names, processes and services offered to customers will not change.

Commenting on the rebrand of Micronutrients, Remco Van Reenen, Managing Director Business Unit Feed Additives, Nutreco, stated, “Including U.S.-manufactured products in the global Selko portfolio will create a more streamlined approach in an increasingly global business landscape, while positioning us to accelerate innovations in animal nutrition.”

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