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Poultry Fortune

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Health • Nutrition • Technology • Marketing

July 2025

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Inside ...

BACTERIOPHAGES the Best Way to control *Salmonella* and *E.coli*

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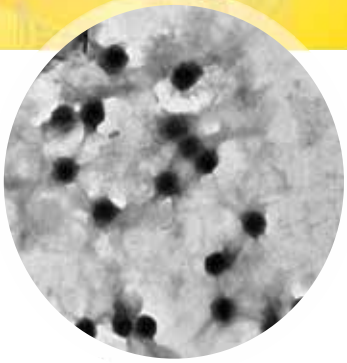
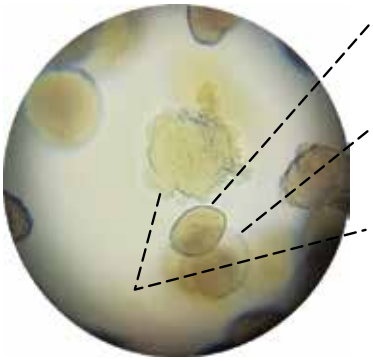


Stages of *Salmonella* colonies infected with Bacteriophages & Progressive Lysis observed on an Agar Plate, under Stereo Microscope



Colony 1 in Stage 1: Intact colony may be infected or yet to get infected

Colony 2 in Stage 2: Phage infected Colony showing Partial Lysis

Colony 3 in Stage 3: Phage infected Colony Completely lysed, cell contents with multiplied phages spreads out in search of their host

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Poultry Fortune

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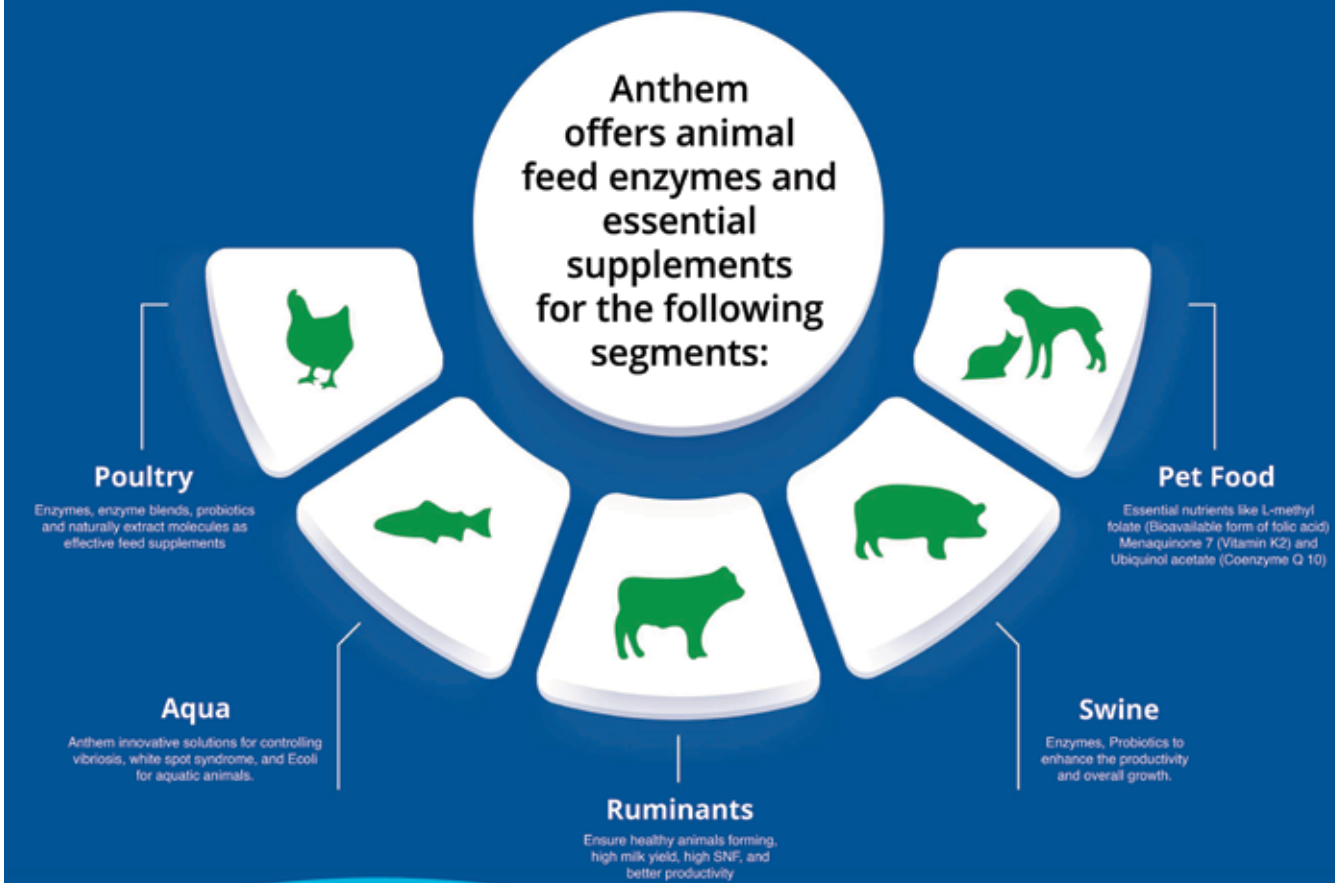

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Cargill Mycotoxin Survey (India) discusses Mycotoxins are secondary metabolites produced by fungi such as Aspergillus, Fusarium and Penicillium - pose a persistent and evolving threat to feed and food safety globally

In the world of poultry farming, two significant concerning factors are litter ammonia and relative humidity. The presence of ammonia gas released by uric acid decomposition in bird droppings is referred to as the litter ammonia level. High quantities of litter ammonia may negatively impact the respiratory system, eyes, and feet, resulting in decreased production and increased mortality rates.

Balanced nutrition plays important role in Layer & Broiler commercial farming

Dear Readers,
The July 2025 issue of Poultry Fortune is in your hands. In the news section you may find news about...

Balanced nutrition plays important role in Layer & Broiler commercial farming. Feed per egg, egg production, cost of production per egg, quality of eggs and livability of birds are key goal for any commercial layer poultry farmer, says Dr Datta Kulkarni, AGM – Technical Services, Venkateshwara B.V Biocorp Pvt Ltd during a presentation on Emerging concept for Layer and Broiler Feed at Vijayawada recently.

In a significant step towards improving feed safety and supporting poultry farmers, Bentoli organized Poultry Farmers meet in association with West Bengal Poultry Federation at the Federation's office in Mednipore. The event witnessed active participation from 25 key poultry farmers from the region and served as a platform to address critical issues related to mycotoxin management in poultry feed.

A three - day technical seminar series focusing on the latest advancements in the understanding and management of Infectious Coryza was conducted on April 16 to 18, 2025, across key locations in northern India - Kaithal (Haryana), Yamuna Nagar and Mohali (Punjab).The sessions were led by Professor Robert R. Bragg, a globally recognized authority from the University of the Free State, Bloemfontein, South Africa. Professor Bragg is known for his extensive research and contributions to the study of avian diseases, especially Infectious Coryza. A key highlight of his presentation was the VH COR4 vaccine, featuring the power of C3. He explained that VH COR4 is specifically designed to target the prevalent strain of Avibacteriumpara gallinarum circulating in India, offering region-specific protection and improved control of the disease.

Novus International, Inc., the leader in intelligent nutrition, recently announced a strategic business realignment designed to accelerate innovation, strengthen operational agility and unlock long-term value for its global customer base. The transformation will result in two separate business units under the NOVUS umbrella - one dedicated to liquid methionine solutions and the other focused exclusively on specialty feed ingredients.

Biosecurity tips for poultry farming to prevent bird flu: With confirmed cases of avian influenza on the rise in the UK and Ireland, biosecurity in poultry farming is at the forefront of everyone's minds. Whilst most biosecurity protocols are standard across poultry units it is always best to be mindful of farm-specific requirements, including good cleaning and disinfection practices if bringing equipment onto different sites, to try and provide best protection for poultry farmers and their flocks. If in doubt, check with the farm manager prior to arrival and do not attend sites unless necessary.

Embryologist eyes blue-light treatment to end male-chick culling: Culling day-old male chicks from egg-laying hens is an on-going dilemma for the global poultry industry. Since female chicks

Contd on next page

NRS GROUP

Poultry Fortune

Our Mission

Poultry Fortune will strive to be the reliable source of information to poultry industry in India.

PF will give its opinion and suggest the industry what is needed in the interest of the stakeholders of the industry.

PF will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

PF will recognize the efforts and contribution of individuals, institutions and organizations for the development of poultry industry in the country through annual Awards presentation.

PF will strive to maintain quality and standards at all times.

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are preferred, that leaves about 50% of production unwanted, resulting in the culling of 7 billion male chicks each year. "The loss for each culled male chick is estimated at $1 (US)," said Yuval Cinnamon, PhD, embryologist at the Agricultural Research Institute–The Volcani Institute, and CSO of Next Hen, an Israeli agri-food research hub and company.

Why India must transition from live bird sales to processed chicken and how to do it right: 90% of India's chicken is sold as live birds, through a fragmented network of local traders, mandi agents and retailers. This leaves producers completely exposed to short-term demand shocks and regional price wars.

Mr G. Bucha Rao, Managing Director, G.B.R Hatcheries Pvt Ltd, Vijayawada, Andhra Pradesh, says that if we provide good quality feed without compromising on the quality of feed ingredients, if we use good vaccines along with effective maintenance of the sheds and the birds, the birds will perform well and the farmer will get good profits.

Cargill Mycotoxin Survey (India), Mycotoxins are secondary metabolites produced by fungi such as Aspergillus, Fusarium and Penicillium-pose a persistent and evolving threat to feed and food safety globally. In India, the warm, humid climate, combined with faulty agricultural and storage practices, creates a conducive environment for mycotoxin contamination, especially in key feed ingredients like maize, rice by products, corn by products and groundnut meal. Mycotoxins are an invisible but serious threat to animal productivity and profitability. Through its rolling survey initiative, Cargill empowers feed manufacturers, integrators, and farmers with actionable intelligence to proactively mitigate risk. In a changing climate and evolving agricultural landscape, such continuous monitoring is not just an option-but a necessity-for ensuring feed safety and livestock well-being in India.

Avitech Nutrition, a member of the Keggfarms group, recently organized a CPR (Cardiopulmonary Resuscitation) and Basic Life Support (BLS) training program for the group. Held on June 10, 2025, in Gurugram, the initiative aimed to empower employees with critical skills to confidently respond during medical emergencies.

Poultry Federation of India team recently visited the state of the art Feed Additives, Antibiotics and Premix Manufacturing plant of Stallen South Asia Pvt Ltd in Palghar, Maharashtra. The visit was aimed at gaining deeper insights into modern practices in animal health and nutrition. The distinguished delegation comprised Mr Ranpal Dhanda, President, Mr Sanjeev Gupta, Vice President (HQ) and Mr Ricky Thaper, Joint Secretary, Poultry Federation of India. They were warmly welcomed by the leadership team at Stallen and taken through the facility's operations, manufacturing processes and innovation-driven initiatives

In the Articles section, **Heat Stress Management in Poultry** by **Dr B C Dutta,** a situation when chicken faces difficulty in achieving balance between body heat production & body heat loss. Genetics, Feather cover, Age, Body Weight, Egg Production stage & flock maintenance all affect a chicken's heat tolerance. Chickens are homeotherms & regulate their body Temperature across a wide range of external Temperature. But continuous high climate Temp overwhelm the thermoregulatory mechanisms, resulting imbalance between the amount of metabolic heat produced & their capacity to dissipate body heat in the environment.

Another Article titled, **Moisture as a Critical Determinant of Feed Hygiene and Safety: Implications for Microbial Control and Livestock Health by Ms Yamini Sripal,** in the world of poultry farming, two significant concerning factors are litter ammonia and relative humidity. The presence of ammonia gas released by uric acid decomposition in bird droppings is referred to as the litter ammonia level. High quantities of litter ammonia may negatively impact the respiratory system, eyes, and feet, resulting in decreased production and increased mortality rates.

Another Article titled, **leg weakness in commercial broilers** by Ms K.Bhavadharani, Mr G.Srinivasan and Ms S.Gayathri discussed that poultry is one of the fastest growing segments of agricultural sector and providing a vital source of protein and income for millions worldwide. Leg problems are one of the most prevalent and serious health concerns in poultry. For heavy meat-type birds such as broiler chicken, the problems become very complex since the birds gain more weight quickly than they develop the bone structure needed to support its body weight.

Challenges in Poultry Production System in Telangana, authored by Vijay Kumar, Rajkumar U, B Prakash and S V Rama Rao, stated that Telangana is one of the major poultry producing states of the country. It has 9.39 % (80 million) of poultry population of the country (2019) in which 17.54 million poultry reared in backyard and 62.46 million in commercial poultry production system. Telangana produce about 18.4 billion eggs annually (12.88% of India) and ranked 3rd and 5.1 lakh ton of chicken meat (10.16 % of India) and ranked 5thin the country. On an average daily 5.04 crore eggs and 1397.2 tonne of chicken meat by slaughter of 10.1 lakh chicken/day is produced in the state. In Telangana, the per capita availability of egg and chicken meat was 483 eggs and 29.21 kg during 2023-24. Despite of impressive growth, commercial as well as backyard poultry farmers face many challenges in the value chain of poultry production. In the present study the challenges in poultry production system are analyzed based on interface meeting with stakeholders at Warangal and Adilabad districts of the state.

Readers are invited to send their views and comments on the news, special feature and articles published in the magazine which would be published under "Readers Column".

Time to time, we shall try to update you on various aspects of Poultry sector. Keep reading the magazine Poultry Fortune regularly and update yourself. Wish you all fruitful results in your efforts.

M.A.Nazeer
Editor & Publisher
Poultry Fortune

Balanced nutrition plays important role in Layer & Broiler commercial farming

Vijayawada: Feed per egg, egg production, cost of production per egg, quality of eggs and livability of birds which are key goal for any commercial layer poultry farmer. Balanced nutrition plays very important role said Dr Datta Kulkarni, AGM – Technical Services, Venkateshwara B.V Biocorp Pvt Ltd during making a presentation on Emerging concept for Layer and Broiler Feed at Vijayawada on 12 June 2025

The challenging issue today is energy component in feed due to increased prices of energy source raw materials.

Venkys is giving nutritional services through their experienced nutritionist team & trained

Dr Datta Kulkarni, AGM – Technical Services, B.V Biocorp Pvt Ltd

veterinarians. He explained about the emerging concept of MIXIBLEND for commercial layers. Mixiblend will be having many advantages during feed manufacturing which will help for manufacturing of quality feed, homogeneous mixing of micronutrients in turn better productivity with balanced nutrition.

Prominent farmers like Mr Bucha Rao, Mr Nageswara Rao, Mr V. Balakrishna, Mr G.L.N. Prasad, Mr B. Kumar Reddy and others took part in the seminar

Dr Datta Kulkarni answered the queries by farmers on different aspects during the seminar. Mr Subba Rao, Zonal Manager for Andhra Pradesh, Venkys India, welcomed.

Subba Rao, Zonal Manager, Andhra Pradesh, Venkys India

G. Bucha Rao, Nageswara Rao, V. Balakrishna, G.L.N. Prasad, B. Kumar Reddy and others are during the seminar at Vijayawada

Correction

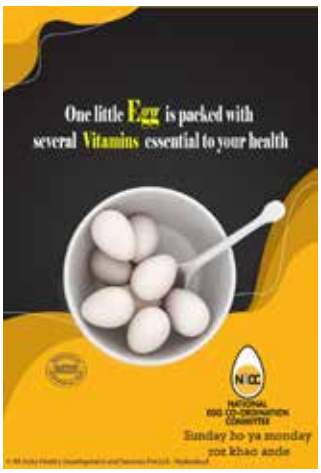
Poultry Fortune in its June 2025 Issue published an interview with Dr K. Somi Reddy. Kindly read his statement as below.

Dr K. Somi Reddy said that HPAI Vaccine is permitted in USA under monitoring from February 25, but in India it is LPAI is only permitted.

Dr B.V. Joshi passes away

Dr B. V. Joshi

Renowned veterinary scientist Dr B.V. Joshi, 82 years, passed away in Bengaluru. Hailing from Yelaburgi in Koppal district, Karnataka, Dr B.V. Joshi was widely respected for his good work and for his contribution to the poultry sector and veterinary profession. He is survived by a son and three daughters.



Bentoli Leads the Way in Feed Safety with Strategic Support to WB Poultry Sector

April 30, Mednipore, West Bengal: In a significant step towards Improving feed safety and supporting poultry farmers, **Bentoli** organized a Poultry Farmers' Meet in association with the **West Bengal Poultry Federation (WBPF)** at the Federation's office in Mednipore. The event witnessed active participation from 25 key poultry farmers from the region and served as a platform to address critical issues related to mycotoxin management in poultry feed.

The centerpiece of the event was the **handover of a state-of-the-art Rapid Mycotoxin Analyzer** to the West Bengal Poultry Federation by Bentoli. This contribution marks a collaborative effort to empower local farmers with tools thatenable faster,more accurate detection of mycotoxins in feed and raw materials - an essential factor for maintaining poultry health and ensuring feed quality.

Mr Prasanna Balaji, Assistant Manager R&D, installed the analyzer at the WBPFoffice and demonstrated its usage. The rapid detection capability of the device, which delivers toxin results within minutes, was well received by the attending farmers.

Dr Sushanta Saha, Regional Sales Director-South & South East Asia, addressed the audience, reiterating Bentoli's mission to support the livestock community through innovative solutions.

"Feed contamination from mycotoxins remains one of the major hidden challenges in poultry farming. By providing this rapid analyzer,Bentoliaims to equip farmers with a proactive tool to safeguard poultry health and minimize economic losses," he said.

The gesture was highly appreciated by the WBPF. **Mr Madhan Mohan Maity**, General Secretary, WBPF, lauded the initiative, stating:

"Bentoli has always demonstrated a strong commitment to farmer welfare.This contribution will significantly enhance the diagnostic capabilities of our members and improve decision-making at the field level."

The attending farmers shared their on-ground experiences and highlighted the need for accessible technologies like rapid toxin testing. Many expressed gratitude for Bentoli's support and acknowledged the importance of such initiatives in their daily operations.

Mr Tapan Kumar Ghosh, Advisor, East India Region, further emphasized the financial impact of mycotoxin-contaminated feed and discussed Bentoli's ongoing efforts to provide holistic mitigation strategies and field-level support.

The event concluded with a vote of thanks delivered by **Mr Partha** (TSM, Bardhaman) and **Mr Ayan** (SE, Contai) who reaffirmed Bentoli's commitment to strengthening farmer relationships through continuous engagement and practical solutions for the poultry industry.

This initiative underscores Bentoli's long-standing vision of delivering **"Better Feed, Better Food"** by bridging the gap between advanced feed technologies and the farmer community.

PFI Delegation Visits Stallen South Asia Pvt Ltd Veterinary Formulations Manufacturing Units in Palghar, Maharashtra

Poultry Federation of India (PFI) team recently visited the state of the art Feed Additives, Antibiotics and Premix Manufacturing Plant of Stallen South Asia Pvt Ltd in Palghar, Maharashtra. The visit was aimed at gaining deeper insights into modern practices in animal health and nutrition. The distinguished delegation comprised Mr Ranpal (Bittu) Dhanda, President, Mr Sanjeev Gupta, Vice President (HQ) and Mr Ricky Thaper, Joint Secretary, Poultry Federation of India. They were warmly welcomed by the leadership team at Stallen and taken through the facility's operations, manufacturing processes and innovation-driven initiatives.

Stallen's manufacturing facility is recognized for its world-class infrastructure and manufacturing excellence. It specializes in a broad portfolio of feed additives and premixes for poultry and cattle, including antibacterials, toxin binders, growth promoters, dewormers, anticoccidials, and mineral supplements. These are produced in various forms such as powders, liquids and tablets. The manufacturing unit is equipped with advanced machinery for formulation, granulation, liquid filling, and packaging. Rigorous quality control is implemented at every stage, from raw material testing to final product release, ensuring product consistency, safety, and compliance with global standards. This dedicated formulation unit in Palghar, Maharashtra, manufactures therapeutic and beta-lactam pharmaceutical products in multiple dosage forms, including tablets, oral liquids, powders, boluses and ointments. The facilities comply with Good Manufacturing Practices (GMP) and are aligned with regulatory requirements to serve both domestic and international markets. With their company products registered in over 65 countries, this milestone reinforces India's pursuit of veterinary self-sufficiency and innovation-led growth.

During the visit the delegation had good interaction with Stallen's senior leadership, including Mr Aniket Parikh, Director; Dr Sanjay Singhal, Chief Operating Officer (Poultry & Cattle) and Mr Davinder Kumar, Vice President – Sales (North & Central). Mr Aniket Parikh, Director, Stallen South Asia PVt Ltd told that Stallen company was started by his visionary father Late Shri AB Parikh in the year 1992. He added that Stallen products are now being exported to over 65 countries in North America, South America, Europe, Middle East, China, Japan, South East Asia and Australia. Mr Davinder Kumar, Vice President – Sales (North & Central) highlighted about their tie-up with FATRO, Italy and their company is marketing the entire vaccine range of FATRO in India Subcontinent. Dr Sanjay Singhal, Chief Operating Officer (Poultry & Cattle) added that Stallen's Pharmaceutical third unit which focus on Halquinol 98%, a non-antibiotic growth promoter being manufactured as per BP 80 (British Pharmacopoeia 1980) standards in Vatva, Gujarat.

The delegation appreciated Stallen's warm hospitality, operational transparency and unwavering commitment to quality. The visit reaffirmed the vital role of companies like Stallen in driving progress within India's veterinary landscape through innovation, regulatory excellence, and responsible manufacturing.

Renowned Professor Shares Groundbreaking Insights on Infectious Coryza in Northern India

A three - day technical seminar series focusing on the latest advancements in the understanding and management of *Infectious Coryza* was successfully conducted from April 16 to 18, 2025, across key locations in northern India—Kaithal (Haryana), Yamuna Nagar, and Mohali (Punjab).

The sessions were led by Professor Robert R. Bragg, a globally recognized authority from the University of the Free State, Bloemfontein, South Africa. Professor Bragg is known for his extensive research and contributions to the study of avian diseases, especially Infectious Coryza. A key highlight of his presentation was the **VH**

COR4 vaccine, featuring the power of **C3**. He explained

that **VH COR4** is specifically designed to target the **prevalent strain of** *vibacteriumparagallinarum* circulating in India, offering region-specific protection and improved control of the disease.

April 16 – Kaithal, Haryana: The technical session on April 16 was organized in Kaithal and focused on the latest insights into the prevention and control of Infectious Coryza. The program commenced with a welcome address by Mr Harjit Padda, Deputy General Manager (DGM), who introduced the distinguished guest. A parallel technical talk on "Vengem" was delivered by Dr Sambhaji Nimbalkar (AGM), followed by an engaging Q&A. The session concluded with a

vote of thanks by Mr Shashi Bhushan, (AGM).

April 17 – Yamuna Nagar: The second day of the series was hosted in Yamuna Nagar, where Professor Bragg delivered an in-depth lecture on the **recent global updates and evolving challenges in Infectious Coryza**. His presentation covered pathogen variations,

diagnostic advancements, and vaccine strategies. Once again, Mr Harjit Padda introduced the speaker, setting the stage for an enlightening session. The event concluded with a vote of thanks by Mr Raju Tanna (AGM), appreciating Professor Bragg's valuable insights and the attendees' participation.

April 18 – Discussion with

Lab Team: On the final day of the visit, a Lab team meeting was held at the Venkateshwara office in Mohali, where Mr Harjit Padda welcomed and introduced the guest speaker, Professor Bragg. The session featured an in-depth discussion between Professor Bragg, Dr S P Singh (GM),Dr Rakesh Gupta (GM), Dr Rohilla (DGM), Dr Danveer Singh (DGM), Dr Sambhaji Nimbalkar (AGM) and the technical team, focusing on field-level challenges and strategies for effective Coryza management in Indian poultry farms. The meeting concluded with a vote of thanks by Mr Raju Tanna (AGM), who acknowledged Professor Bragg's valuable contributions and thanked all attendees for their active participation

This knowledge-sharing initiative reflects the ongoing commitment of the organizing teams to bring global expertise to the doorstep of Indian poultry professionals and ensure science-backed disease control at the grassroots level.

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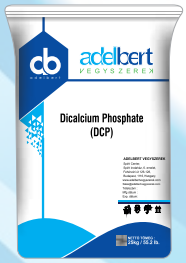

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Novus International Announces Strategic Business Realignment to Drive Future Growth and Innovation

CHESTERFIELD, MO (June 24, 2025) – Novus International, Inc., the leader in intelligent nutrition, today announced a strategic business realignment designed to accelerate innovation, strengthen operational agility, and unlock long-term value for its global customer base. The transformation will result in two separate business units under the NOVUS umbrella - one dedicated to liquid methionine solutions and the other focused exclusively on specialty feed ingredients.

This new structure reflects NOVUS's continued evolution as a science-driven, customer-focused company committed to

Dan Meagher

helping producers achieve more. Both units will be structured as separate platforms, each with dedicated profit and loss accountability and the autonomy to focus on their core capabilities.

NOVUS CEO Dan Meagher will continue to lead the parent organization and provide strategic oversight across both businesses.

"Each unit now has the clarity and freedom to innovate faster, respond smarter, and continue delivering solutions that meet the evolving needs of producers around the world," Meagher said. "This is a bold, forward-thinking step that allows us to go further in our commitment to deliver value for our customers, our teams, and our partners."

Dave Dowell has been appointed President of the Methionine Business Unit, while Ed Galo will lead the Specialty Business Unit as President.

NOVUS has long been recognized for pioneering advancements in liquid methionine technology and for its leadership in specialty nutrition through intelligent feed solutions. The formation of these focused business units reinforces this leadership and unlocks new potential to scale innovations globally.

"This realignment is not a division - it's an evolution," Meagher said. "An evolution that enables us to better serve the industry by doing what we do best - Deliver more science, more insight, and more inspiration. This is how we continue to show the world that we're Made of More™."

Both business units will maintain uninterrupted service for dairy, poultry, and swine producers globally. Customers can continue to expect the same levels of excellence, innovation, and integrity that have defined NOVUS for more than 30 years.

Biosecurity tips for poultry farming to prevent bird flu

With confirmed cases of avian influenza on the rise in the UK and Ireland, biosecurity in poultry farming is at the forefront of everyone's minds.

Whilst most biosecurity protocols are standard across poultry units it is always best to be mindful of farm-specific requirements, including good cleaning and disinfection practices if bringing equipment onto different sites, to try and provide best protection for poultry farmers and their flocks.

If in doubt, check with the farm manager prior to arrival and do not attend sites unless necessary.

There is not yet a mandatory housing order in the UK as there is in Ireland, and whilst keeping free-range birds indoors provides another level of protection for birds, it does increase pressure on litter management where birds would usually spend the majority of their days out on the ranges.

Signs and symptoms of avian influenza in poultry

Avian influenza (AI), a disease caused by type A influenza viruses, can infect both wild and domestic birds. Several factors can contribute to the spread of AI, such as migratory bird flight patterns, international trade, and points of cross-contact between humans and wild birds. AI is more commonly detected in colder regions due to the resilience of the virus in low-to-freezing temperatures.

There are two clinical types of influenza virus in poultry: highly pathogenic (HP) and low-pathogenic (LP). The HP strains of bird flu can spread rapidly among poultry flocks and may cause multi-organ failure and sudden high mortality levels. The LP strains of bird

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flu form as asymptomatic infections, respiratory disease, and/or drops in production.

Symptoms indicating avian flu in birds include:

- Sudden death without any warning signs
- Purple discoloration of the wattles, comb and legs
- Swollen head, eyelids, comb, wattles and hocks
- Soft-shelled or misshapen eggs
- Decreased egg production
- Lack of energy, appetite and coordination
- Diarrhoea
- Nasal discharge
- Coughing or sneezing
- Ruffled feathers

How to help prevent avian influenza in poultry

Avian influenza viruses spread through direct contact with infected birds or through contaminated feed, water, equipment and clothing. Therefore, biosecurity is the first and most important method of prevention at the farm level. Poultry producers are advised to:

Prevent wildlife access: Reduce attractants such as standing water, feed spills, and improperly stored waste. Install deterrents such as exclusionary netting and screens, repellent gel, bird spikes, and scare devices, which should be moved and replaced frequently.

Control access of people and equipment: If infected wild birds are in the area, reduce the movement of people, vehicles or equipment to and from areas where poultry are kept. Change your clothes before and after contact with your flock, and ensure that any visitors do the same.

Maintain high sanitation levels: Clean and disinfect regularly, from the property and poultry houses to equipment, vehicles and even footwear. For commercial poultry owners, clean and disinfect your poultry housing at the end of each production cycle. Wash your hands thoroughly before and after contact with birds.

Maintain surveillance and reporting: At a minimum, follow local regulations regarding breeder flock monitoring and testing protocols. Contact a vet if you have any concerns. Also, be sure to report illnesses and bird deaths. Quick action will help protect other flocks in the area if the disease is confirmed.

Effective poultry management is crucial in reducing the risk of avian influenza and protecting flocks from potential outbreaks. By implementing strong biosecurity measures, maintaining proper sanitation, and monitoring bird health closely, poultry farmers can help safeguard their operations. Staying vigilant and proactive is key to ensuring the health and productivity of poultry flocks in the face of evolving disease challenges.

Source : Alltech

Broiler Contract Farming: Can Integration Evolve for Mutual Success?

Broiler Contract Farming is well-established in many countries, particularly in the U.S., Brazil, India, and China.

United States

- Nearly 90% of broilers are grown under contract farming with integrators like Tyson Foods, Pilgrim's Pride, and Perdue Farms.
- Integrators provide chicks, feed, veterinary support, and technical guidance, while farmers invest in infrastructure and manage daily operations.
- Payment is based on weight gain, feed efficiency, and mortality rates.

Brazil

- Leading poultry exporter with strong contract farming integration.
- Companies like BRF and JBS control production, ensuring quality for exports.
- Farmers benefit from stable prices, but power is concentrated with integrators.

Europe

- Contract broiler farming is common but more regulated, emphasizing animal welfare.
- Countries like the Netherlands and Germany have stringent environmental and welfare laws, increasing production costs.

India

- Rapidly growing contract broiler farming model with integrators like Suguna, Venky's, and Godrej Agrovet.
- Farmers receive inputs (chicks, feed, vaccines) and earn based on weight gain.
- Challenges include power imbalance between farmers and integrators.

China

- Large-scale contract farming with major companies like CP Group.
- Government policies support contract farming to ensure food security.

The Double-Edged Sword of Vertical Integration

Vertical integration has revolutionized the global poultry industry, creating efficient, large-scale production systems that

dominate markets in the USA, Brazil, Thailand, and India. Integrators like Tyson Foods, CP Foods, BRF Suguna, IB and many other companies have built empires by controlling every aspect of broiler production—from hatcheries to processing.

But beneath this seemingly successful model, a silent conflict brews between integrators and contract farmers. As farmers struggle with low earnings, rigid contracts, and financial uncertainty, the future of vertical integration hangs in the balance. Will this model adapt and evolve, or will a new wave of independent and cooperative poultry farming disrupt the system?

A Silent War in the Poultry Industry

Broiler contract farming was supposed to be a win-win. Integrators promised stability, assured payments, and access to better technology. Farmers saw a chance to escape market risks and secure a steady income.

But behind the polished image of integration, a silent war is brewing. **Farmers say they've become mere laborers on their own farms, locked into one-sided contracts where they take the biggest risks for the smallest rewards. Integrators, on the other hand, argue that without their investment, expertise, and market access, small farmers wouldn't survive at all.**

So, who is really benefiting? And can this system sustain itself in the long run, or are we heading toward a breaking point?

The Reality of Broiler Contract Farming: Who Holds the Power?

The Illusion of Stability

Farmers sign up because they fear market volatility—feed costs fluctuate, chicken prices crash, and disease outbreaks can wipe out entire flocks. Contract farming removes some of these risks, but at what cost?

Who really controls the business? The integrator. Who decides the payment structure? The integrator. Who takes most of the risk? The farmer.

A Business Model Where Farmers Have No Say

Farmers have no control over chick quality, feed formulation, or disease outbreaks—yet, when something goes wrong, they are often penalized.

- **Poor-quality chicks? Farmer's problem.**
- **Lower weight gain due to feed issues? Farmer earns less.**
- **Birds die from disease? Farmer absorbs the loss.**

And the growing charge? A few rupees per bird, barely covering their costs. Farmers invest their land, labor, and time, yet they remain powerless.

- **The Integrator's Justification: "Without Us, You Wouldn't Survive"**
- **Integrators argue that farmers are still better off than if they raised birds independently.**

They provide a steady stream of income (even if small).

Farmers don't have to worry about market fluctuations.

They supply veterinary support, advanced genetics, and bulk feed pricing.

This is partly true. But what's the alternative? The farmer takes loans, buys chicks and feed at market rates, and risks everything on unpredictable prices.

So, is contract farming a safety net or a trap?

The Breaking Points: Why Farmers Are Protesting

India: Farmers vs. Integrators

In Tamil Nadu, Karnataka, and Maharashtra, contract farmers have staged protests against low growing charges and unfair contract terms. Some have even threatened to exit contracts entirely, arguing that they are being forced into debt despite working harder than ever.

- Growing charges have remained stagnant while production costs have risen.
- Farmers accuse integrators of manipulating input costs—higher feed prices mean lower profits for farmers but more money for integrators who control the feed supply.
- In some cases, companies delay payments, leaving farmers struggling to cover their expenses.

USA: Farmers Take Legal Action

In the U.S., Tyson Foods, Perdue, and Pilgrim's Pride have faced multiple lawsuits over contract terms that keep farmers in perpetual debt.

One farmer in Arkansas described it best: "You start with a dream of running your own farm. Then you realize you're just an employee with no rights, no voice, and no way out."

Brazil: Can Co-Ops Be a Solution?

In contrast, Brazil has seen more success with cooperative broiler farming.

- Farmers share ownership in processing plants.
- They negotiate better prices as a collective force.
- Instead of fixed growing charges, farmers earn based on profits from sales.
- Could this model work elsewhere?

Can Broiler Integration Survive?

If contract farming continues down its current path, something will break. Either:

Farmers will abandon contracts – leading to a shortage of growers and production issues.

Governments will intervene – forcing integrators to offer fairer

contracts and better pricing.

Alternative models like co-ops will rise – challenging the dominance of integrators.

So, what needs to change?

- **Profit-sharing instead of fixed growing charges** – Farmers should get a percentage of final profits, not just a fixed rate per bird.
- **Greater contract transparency** – Farmers need more control over production, including feed quality and chick selection.
- **Farmer cooperatives** – By banding together, farmers can negotiate better terms and even process their own birds, as seen in Brazil and parts of Europe.

If integrators refuse to adapt, they risk alienating the very farmers they depend on.

The Future of Contract Broiler Farming

The broiler contract farming model is at a crossroads.

Farmers are losing patience. Governments are watching closely. Consumers are starting to ask questions about fair farm practices.

If integrators want to protect this model, they must start treating farmers as partners, not disposable laborers.

The future of poultry integration will not be about control—but collaboration.

Source: aviNews

Embryologist eyes blue-light treatment to end male-chick culling

Dr Yuval Cinnamon

Culling day-old male chicks from egg-laying hens is an on-going dilemma for the global poultry industry. Since female chicks are preferred, that leaves about 50% of production unwanted, resulting in the culling of 7 billion male chicks each year.

"The loss for each culled male chick is estimated at $1 (US)," said Yuval Cinnamon, PhD, embryologist at the Agricultural Research Institute–The Volcani Institute, and CSO of NextHen, an Israeli agri-food research hub and company.

"That's a huge amount of money in wasted energy to incubate male chicks, as well as labor to manually sort, cull and dispose of them. It also poses animal welfare and environmental sustainability issues for the industry."

In fact, culling male chicks is already illegal in Germany and France, and The Netherlands will follow suit by 2026.

At the 2025 International Poultry Scientific Forum, Cinnamon outlined the work his research team, led by Enbal Ben-Tal Cohen, PhD, at Volcani, has done on the Golda hen and optogenetics — a blue-light treatment — to halt the development of male chicks and thereby the need for culling.

A new approach

Past attempts to sort between male and female chicks have focused on the early stages of embryogenesis. But as Cinnamon noted, gender develops late in the process. "In chickens you start to see a slight difference between males and females under the microscope after 9 days, but that's too late," he explained.

Sampling DNA might offer insight, but it's not applicable at scale. There's also potential for mistakes. "The industry cannot tolerate mistakes because unwanted males will hatch and wanted females will be culled," he said. "Any solution must be practical, easy to adopt and economically viable for the hatchery."

Cinnamon and his research team turned their attention to the sex chromosomes. In chickens, the mother hen determines the embryo's sex by distributing the Z and W chromosomes. All male chicks receive a Z chromosome from the mother and the father rooster. All female chicks receive a Z chromosome from the father and a W chromosome from the mother.

"If we can introduce a sex-linked genetic trait to the maternal Z chromosome, which only male embryos inherit, we can prevent those embryos from developing," he noted.

This resulted in the institute's research team developing a method to genetically edit the hen's Z chromosome, which led to the development of Golda hens.

Turning to light

The next stage was to identify a genetic molecular switch to activate the sex-linked trait within the Golda hens with the goal of producing only female chicks. The key is for it to be controllable from outside the shell without interfering with the egg itself. It also must be easily applied within the commercial hatchery setting. "It has to be 100% reliable," Cinnamon said. "We don't want males to hatch."

That's where light comes in. "It won't affect the eggshell, and maybe we can manipulate the action," he added.

The researchers zeroed in on two proteins that respond to blue light. "Upon blue-light illumination these proteins are dimerized. When the light is turned off, they dissociate," Cinnamon said. "It's just a molecular

switch."

The process is dose-dependent, which means they needed to identify the light dose, duration and intensity. Other considerations included the light wavelength, pulsation and the ambient conditions surrounding the egg.

"It's an umbrella of light dosage. So, it's a combination of many factors that we need to know and to calibrate," he said.

The team is currently evaluating light duration to identify the conditions at which the light induction works within a commercial setting.

"We are testing a wide range of temperatures, from 18° C to 20° C (64.4° F to 68° F), or from storage to pre-incubation at 24° C, 26° C, 28° C (75.2° F, 78.8° F, 82.4° F), which are suitable conditions," Cinnamon said. They are studying an increasing temperature scale, and by year's end the demonstration will involve tens of thousands of eggs.

No male-chick culling

In a research setting, Cinnamon and his team found that illuminated male eggs will stop developing, and they can be removed from incubators as early as 48 to 72 hours post-placement. Those eggs could then be used as regular table eggs, with the caveat that they are labeled as a genetically modified organism (GMO) due to the synthetic genetic trait linked to the Z chromosome.

"In terms of nutritional value, the discarded male eggs are no different than regular table eggs, but they do contain GMO material. Nonetheless, the layer hens and the table eggs that they produce are, by definition, non-GMO," he noted. "Society will have to decide for its own morality whether they want to keep culling male chicks or use a safe product that eliminates that culling."

Because it is a genetic-based technology, the light-sorting mechanism should be introduced into the pure lines of breeding companies. That means the parent Golda hens are gene-edited, and all consecutive hens and eggs produced are clear. The females they produce receive an unmodified W chromosome from the Golda mother hen and an unmodified Z chromosome from the father rooster, so there is no such issue.

"Female embryos are unaffected by the blue light and develop normally. Those chicks are reared and start laying table eggs that are exactly like the eggs the industry currently produces," Cinnamon emphasized. "So, there is absolutely no difference. Farmers will get the same layers and they will produce the same table eggs."

Cinnamon reported that the UK-based animal welfare organization Compassion in World Farming has followed the research and provided guidance. "In our project, they see the only viable solution to the problem of culling male chicks," he noted.

The European Foods Safety Authority and the US FDA also have indicated that the layers and their table eggs are non-GMO, he said.

Far-reaching benefits

Beyond addressing the moral and animal welfare challenges of culling male chicks, there are many other benefits to ending the practice. It would double the available incubation space, better utilize incubation energy, eliminate male-chick disposal and add to the egg supply.

"This technology will bring significant economic value," Cinnamon said, "and I hope this will drive industry interest in adopting the Golda hen."

It also could provide solutions for other poultry sectors, such as turkeys. "There is a biological element in turkeys that makes the specific embryonic cells more difficult to grow than in chickens," he noted. "But once that challenge is solved, this technology could be applied to turkeys as well."

A solution to male-chick culling has long been needed and will be even more important in the years ahead as world egg production is estimated to reach 100 million metric tons annually by 2035. "We think this technology will prove to be an affordable and healthy solution for the entire world," Cinnamon concluded.

Source : Modern Poultry

Why India must transition from live bird sales to processed chicken and how to do it right

90% of India's chicken is sold as live birds, through a fragmented network of local traders, mandi agents and retailers. This leaves producers completely exposed to short-term demand shocks and regional price wars.

Why India Must Transition from Live Bird Sales to Processed Chicken and How to Do It Right

The Unseen Cost of Price Fluctuation Poultry farmers and integrators live with constant uncertainty.

One day, the live bird price is INR 100/kg; the next day, it's INR 70. Despite careful planning and biosecurity, they find themselves at the mercy of a market without controls, hedging tools or predictability.

This snake – and - ladder game isn't just a minor inconvenience. For thousands of farmers and integrators, it means boom-or-bust cycles, mounting debt, and emotional distress.

Why does this happen? Because over 90% of India's chicken is sold as live birds, through a fragmented network of local traders, mandi agents, and retailers. This leaves producers completely exposed to short-term demand shocks and regional price wars.

Trapped in the Wet Market Loop

Unlike dairy or eggs, chicken has never found its way into India's formal, organized retail sector in a big way. The reasons are many:

- *A cultural preference for freshly cut meat.*
- *Lack of refrigerated storage at retail points.*
- *Informal supply chains run by live bird traders.*
- *Consumer skepticism about frozen or packaged meat.*

This dependence on the wet market ecosystem has led to an industry that is technologically advanced at the backend (feed, genetics, hatcheries) but archaic at the point of sale.

Why Processed Chicken is the Only Way Forward

Processed chicken offers what live bird trading can never provide: control, hygiene, quality, traceability, and pricing power. When producers can cut, pack, chill or freeze, and distribute chicken through modern channels, they create value — not just for consumers, but for themselves.

Countries like Brazil and the US moved long ago to processed systems — enabling them to stabilize prices, control diseases, reduce waste, and expand exports. India is still playing catch-up, but the tide is turning.

What About the Retailers and Traders

This is where caution — and compassion — are needed.

Lakhs of small traders, retailers, and butchers depend on the live bird system. They are not the problem; they are part of the ecosystem. The challenge is that the transition to processed chicken threatens their livelihood unless they are included in the solution.

If the industry turns its back on them, they will resist the change — and rightfully so.

Challenges in Scaling Up Processed Chicken

Even large integrators, who have invested in modern processing units, are unable to process more than a fraction of their total live bird production. Why?

- *Processed chicken demand is still less than 10% of the total market.*
- *Cold chain infrastructure is limited to metro cities.*
- *Consumers remain price-sensitive and skeptical.*
- *There is no national processed chicken brand with mass appeal like Amul in Dairy.*

This creates a bottleneck: plants exist, but markets don't.

A Roadmap for Transition: Step-by-Step, Inclusive, Scalable So how do we solve this? Not with revolutions, but with evolution. Here's a phased roadmap:

District-Level Processing Hubs

Establish small to mid-sized chicken processing plants in every district, owned by

producers, integrators, and stakeholders.

Shared Ownership Models

Encourage co-operatives (like Amul) or private limited companies with investor-farmer partnerships.

Inclusion of Retailers

Train existing butchers and live bird retailers to run processed chicken outlets.

Market Development

Launch nationwide campaigns to promote hygienic, processed chicken.

Policy Support

Provide subsidies for cold chains, tax incentives, and simplified food safety licensing.

The Future is Processed, but the Path Must Be Humane

India cannot afford to let its poultry farmers suffer in silence any longer. Nor can it ignore the global demand for hygienic, traceable chicken. The live bird model is outdated — it's time to build a new system that rewards producers, empowers retailers, and protects consumers.

But this must be done with empathy. Every stakeholder — from hatchery to handler, from trader to tech — must find a place in this new ecosystem.

The future isn't about cutting out the old. It's about carving space for everyone in a smarter, stronger, and safer poultry value chain.

Source : aviNews

Mycotoxin Survey

Cargill Mycotoxin Survey (India) Survey Period : January 25 – May 25

Mycotoxins are secondary metabolites produced by fungi such as Aspergillus, Fusarium, and Penicillium-pose a persistent and evolving threat to feed and food safety globally. In India, the warm, humid climate, combined with faulty agricultural and storage practices, creates a conducive environment for mycotoxin contamination, especially in key feed ingredients like maize, rice by products, corn by products and groundnut meal. Mycotoxins are an invisible but serious threat to animal productivity and profitability. Through its rolling survey initiative, Cargill empowers feed manufacturers, integrators, and farmers with actionable intelligence to proactively mitigate risk. In a changing climate and evolving agricultural landscape, such continuous monitoring is not just an option-but a necessity-for ensuring feed safety and livestock well-being in India.

Key highlights of Mycotoxin Survey :

Total 6304 analysis has been conducted out of which 99% were contaminated with mycotoxins & 83% were contaminated above threshold risk.

India comes in severe high risk zone, where 75% 100% analysed samples were above performance risk level for mycotoxin contamination

Aflatoxin is most prevalent mycotoxin followed by T2, DON (Vomitoxin), Zearalenone, and Fumonisin, which all can reduce performance and increase disease incidence in poultry farm operations. They exert their effects through alteration in nutrient content, absorption, and metabolism, changes in the endocrine function, and suppression of the immune system.

Certain ingredients consistently exhibit higher susceptibility to specific mycotoxins. Highly contaminated ingredients are: De oiled Rice Bran (DORB), Dried Distillers Grain Soluble (DDGS) specifically corn DDGS and Pea Nut Meal, These ingredients should be used judiciously with precautions. Regular mycotoxin analysis should be conducted to know contamination levels.

Moderately contaminated ingredients are: Corn, Soyabean Meal (SBM) and Broken Rice Corn is major constitute of poultry feed & being used more than 50%, Therefore, low level of contamination in corn could be highly harmful for bird.

A major concern identified through the survey is the frequent co-occurrence of multiple mycotoxins in single samples. For example, combinations of aflatoxin, fumonisin, and DON are increasingly common in raw materials. This synergistic toxicity exacerbates the risk to animal health, often leading to immunosuppression reduced feed intake, poor performance, and reproductive issues. Multiple mycotoxin co occurence was 97% in given time period.

Total Analyses	6,304

Total Contaminated Analyses Above Detection Limit	6,234

Percent Analyses Above Cargill Performance Risk Threshold

Percent Contaminated Analyses Above Detection Limit

Mycotoxin Contamination Pattern

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Contaminated Analyses Above Perf. Risk Threshold	% Analyses Contaminated Within Cargill Performance Risk Thresholds-Same period last year
Aflatoxin	6,173	99%	83%	83%
Fumonisin	32	90%	17%	59%
T2 Toxin	35	100%	100%	63%
Vomitoxin	32	100%	45%	93%
Zearalenone	32	97%	72%	86%
Total	6,304	99%	83%	82%

Percent Above Performance Risk ● 0-24% ● 25-49% ● 55-74% ● 75-100%

Mycotoxin Contamination Pattern: Corn

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	354	93%	71%	18	157	19
Fumonisin	5	100%	75%	828	1,447	396
T2 Toxin	5	100%	100%	76	92	18
Vomitoxin	5	100%	50%	167	239	72
Zearalenone	5	100%	25%	36	69	19

Solution for Heat Stress

Mycotoxin Contamination Pattern: Soya Bean Meal

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	66	65%	37%	26	107	25
Fumonisin	10	89%	0%	153	378	122
T2 Toxin	13	100%	100%	55	111	24
Vomitoxin	10	100%	44%	318	825	315
Zearalenone	10	100%	67%	65	184	49

Mycotoxin Contamination Pattern: De Oiled Rice Bran & Rice By Product

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	5,153	100%	86%	29	280	25
Fumonisin	10	89%	22%	544	1,826	597
T2 Toxin	10	100%	100%	76	198	58
Vomitoxin	10	100%	67%	248	482	121
Zearalenone	10	100%	100%	201	556	157

Mycotoxin Contamination Pattern: Peanut Meal

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	27	100%	100%	83	236	48
Fumonisin	5	100%	0%	156	328	101
T2 Toxin	5	100%	100%	144	172	47
Vomitoxin	5	100%	20%	148	236	61
Zearalenone	5	100%	80%	52	70	13

Mycotoxin Contamination Pattern: Corn DDGS

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	185	100%	93%	126	443	107

Mycotoxin Contamination Pattern: Corn Gluten Feed

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin	122	94%	64%	26	151	28

Percent Above Performance Risk ● 0-24% ● 25-49% ● 55-74% ● 75-100%

Mycotoxin Contamination Pattern Statewise

Punjab

N° Samples	3,097	Contaminated	3,097
% above Performance Risk	87%	% Contaminated	100%

Maharashtra

N° Samples	789	Contaminated	785
% above Performance Risk	60%	% Contaminated	99%

Haryana

N° Samples	444	Contaminated	444
% above Performance Risk	98%	% Contaminated	100%

Karnataka

N° Samples	105	Contaminated	102
% above Performance Risk	74%	% Contaminated	97%

Andhra Pradesh

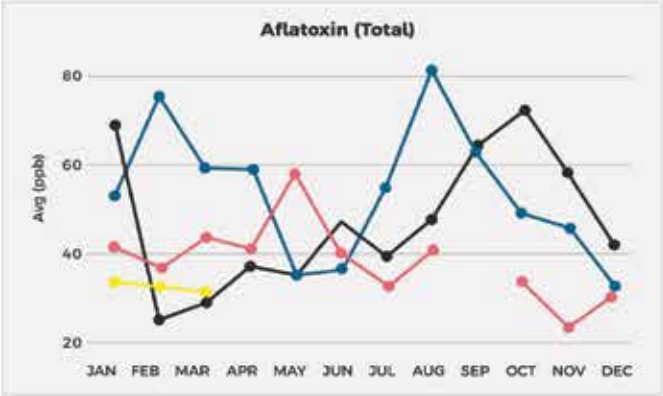
N° Samples	15	Contaminated	15
% above Performance Risk	40%	% Contaminated	100%

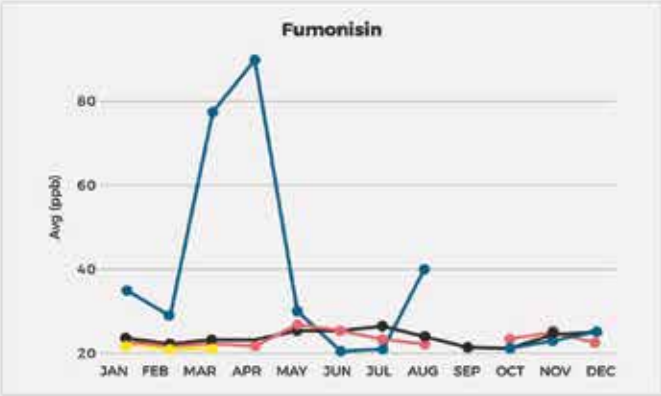
Rajasthan

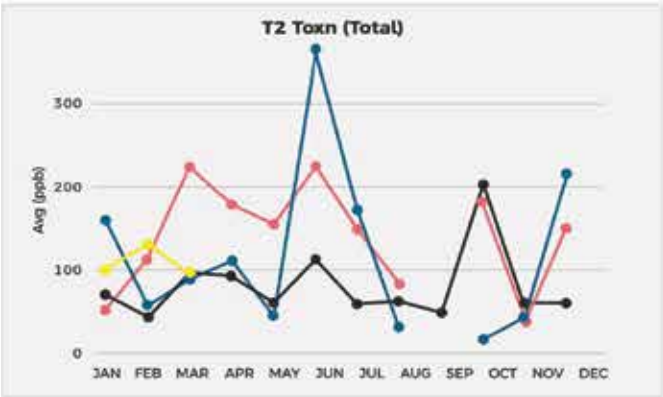
N° Samples	19	Contaminated	19
% above Performance Risk	74%	% Contaminated	100%

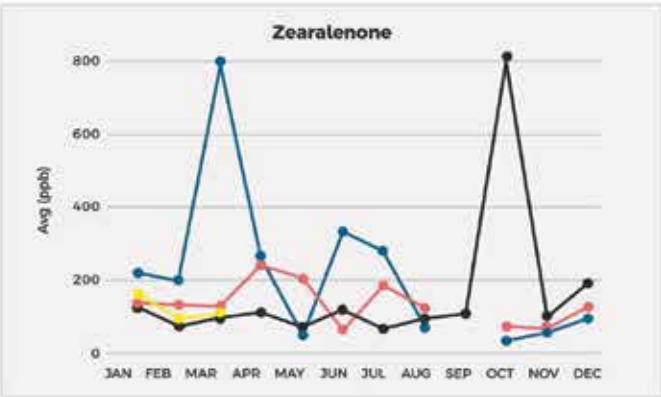
Category	KPI	Haryana	Karnataka	Maharashtra	Punjab	Rajasthan	Andhra Pradesh
General	N° Samples	444	105	789	3.097	19	15
	Average (ppb)	38	25	20	33	318	33
	Maximum (ppb)	400	145	443	384	1,447	222
	Standard Deviation	53	25	33	33	414	55
Contaminated	N° Positive	444	102	785	3,097	19	12
	% Contaminated	100%	97%	99%	100%	100%	80%
	Average Contamination in ppb	38	26	20	33	318	42
Above Performance Risk	N° Above Performance Risk	433	78	472	2.702	14	8
	% above Performance Risk	98%	74%	60%	87%	74%	53%

Mycotoxin Prevalence Pattern (Yearwise)

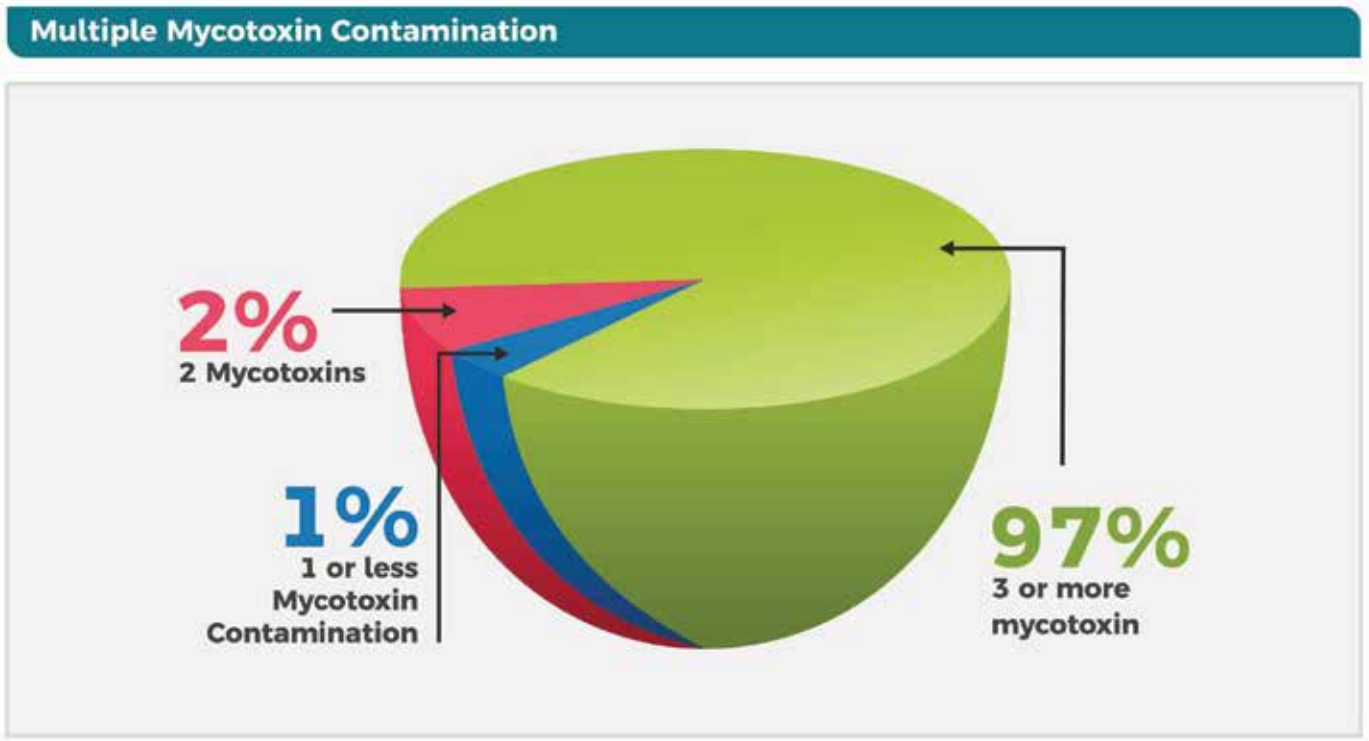








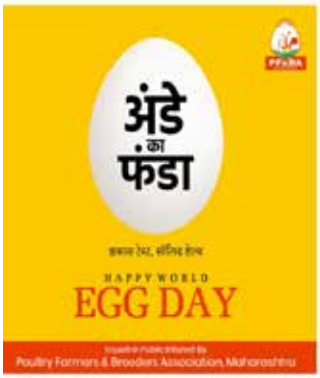
Legend ●2022 ●2023 ●2024 ●2025



How to identify mycotoxicosis in poultry
(Differential Diagnosis is Critical for Mycotoxicosis)

- **Poor Growth & Feed Conversion**
  Birds eat normally but show stunted growth and low weight gain.
- **Reduced Egg Production & Quality**
  Lower egg count, thin shells, or discolored yolks
- **Increased Mortality or Sudden Death**
  Especially in young birds without prior signs of disease
- **Immunosuppression**
  Increased susceptibility to secondary infections eg. E. Coli infection
- **Diarrhea or Wet Droppings**
  Often persistent, unrelated to other dietary changes
- **Lesions in Organs (on necropsy)**
  Liver swelling, pale or yellowish liver, or kidney damage
- **Feather Pecking or Nervous Symptoms**

In some cases eg, ochratoxin or fumonisin exposure, neurological signs my appear



Avitech Nutrition appoints Raj K Gera as President – Sales

K. Raj, President - Sales, (Domestic & International)

Mr Raj K Gera has been appointed as President – Sales (Domestic & International), Avitech Nutrition, effective June 2, 2025.

Mr Gera joins Avitech Nutrition with over 30 years of experience the animal health sector. He began his professional career with Ranbaxy Laboratories in November 1993. In his most recent role, Mr Gera served as Managing Director of Hester Biosciences (Nepal and Tanzania), where he led international operations and contributed significantly to market expansion and business performance in key regions.

Avitech Nutrition is expanding into global markets and focusing on livestock as part of its ongoing growth strategy.

Mr Gera's leadership will be pivotal in advancing these priority areas for Avitech Nutrition.

Avitech welcomes Mr Raj K Gera and looks forward to his contribution in accelerating the company's sales growth.

Avitech Nutrition Hosts Life - Saving CPR and BLS Training for Team Members

Avitech Nutrition, a member of the Keggfarms group, recently organized a CPR (Cardiopulmonary Resuscitation) and Basic Life Support (BLS) training program for the group. Held on June 10, 2025, in Gurugram, the initiative aimed to empower employees with critical skills to confidently respond during medical emergencies.

The training session was conducted by Dr Rajinder Saini, a renowned first aid training instructor with extensive experience with multiple disaster management agencies.

The program was designed to provide attendees with the essential knowledge and confidence needed to act swiftly and effectively in urgent situations such as heart attacks, choking incidents, or cases of unconsciousness. Through a blend of practical demonstrations and realistic scenarios, the session made it easier for everyone to grasp the immediate actions required during a crisis.

This vital training underscores Avitech Nutrition's commitment to fostering employee safety, promoting health awareness, and contributing to overall community well-being.

USDA Scraps Salmonella Safety Plan

The US Department of Agriculture is withdrawing a proposal aimed at reducing Salmonella risks in poultry products for US consumers, Reuters reported, citing the agency on Thursday, increasing concerns about oversight of the food supply under President Donald Trump.

The withdrawal represents the administration's latest missed opportunity to protect public health, food safety experts said. It was applauded by the poultry industry, which said the measure would have imposed a financial burden on producers without doing much to reduce contamination risk.

The USDA last month eliminated two committees that advised it on food safety, while the US Food and Drug Administration recently suspended a quality control program for testing milk and other dairy products.

Salmonellae are bacteria that live in animal and human intestines and are shed through feces. People usually become infected by consuming contaminated water or food, and symptoms include diarrhea and fever.

The proposal, which the Biden administration announced last summer, would have set final standards to determine whether raw poultry products are contaminated with certain Salmonella. It also sought to require poultry facilities to use certain procedures to monitor and document their processes for preventing contamination.

The proposal took three years to develop and included input from one of the two suspended food safety committees, the USDA said last year.

"The proposal would have, for the first time, set enforceable limits on contamination," he said. "This proposal was a long-overdue step toward aligning poultry safety regulations with modern science and consumer expectations."

The CDC estimates Salmonella causes about 1.35 million infections in the United States annually, though only 1 in 30 infections is diagnosed. Resistance to antibiotics is increasing in Salmonella, which can limit treatment options for people with severe infections, according to the CDC.

Source: The Poultry Site Newsletter

GBR, the big name for Vertical Broiler Integration in Andhra Pradesh

GBR Hatcheries has 100,000 broiler parents and 20 lakh capacity commercial broiler farms

Vijayawada: If we provide good quality feed without compromising on the quality of feed ingredients, if we use good vaccines along with effective maintenance of the sheds and the birds, the birds will perform well and the farmer will get good profits, said Mr G. Bucha Rao, Managing Director, G.B.R Hatcheries Pvt Ltd, Vijayawada, Andhra Pradesh.

We are happy and satisfied with Vertical Broiler Integration. Myself, my partners, family members and the staff are working together as a team and succeeded in our efforts to develop the company to the present level, stated Bucha Rao. We are all from agriculture family. After working for some time in a company, I wanted to start poultry farming, started it, worked hard and succeeded, he added.

Answering to a question Bucha Rao said, without any ones help we cannot grow. My parents worked hard and provided me education. Instead of working in a company, selecting the line of poultry farming for my career was the turning point in my life for my development. I started poultry farming with 600 birds and grown. My brothers, sisters and partners all are happy with our company's growth.

Poultry industry has good future prospects. If the stakeholders work hard with 100 percent concentration, they can definitely succeed. If we can export 50 % of eggs to northern areas of the country, there will not be any marketing problem for the eggs produced in Andhra Pradesh. Broilers produced in the state can be consumed locally and all over, Bucha Rao told.

G. Bucha Rao,
Managing Director,
G.B.R Hatcheries Pvt Ltd

Except due to Bird flu in 2006, during Covid time in 2020 and again due to Bird flu during January–February 2025, we are most comfortable with poultry farming in my career. We are happy and satisfied with Vertical Broiler Integration. Selecting the line of poultry farming for my career was the turning point in my life for my development, said Mr G. Bucha Rao, Managing Director, G.B.R Hatcheries Pvt Ltd in an interview by M.A. Nazeer, Editor, Poultry Fortune. Excerpts:

My younger generation will look into future plans

I leave it to the children in our family about future plans. If the younger generation wants to go for processing plant in future after gaining experience they can do it in the expansion programmes for the company, Bucha Rao stated.

G.B.R Hatcheries Group has a turnover of INR 200 crores.

Partners and Key persons of the company

1. G. Bucha Rao, Managing Director
2. G. Lakshmi Tulasi, Director
3. B. Sambasiva Rao, Director
4. M. Narendra Babu, Director
5. Dr G. Anusha, M.B.B.S & M.D, Administration
6. Mr G. Raghavendra Chowdhary, Operations Manager, EC Farms of 5 lakh capacity
7. Mr G. Rajesh Chowdhary, Operations Manager, Feed plants & Farms
8. Mr P. Subramanyam, Marketing of broiler birds.

Activities of G.B.R Hatcheries

1. Breeding farms 100,000 Vencobb parents.
2. Own broiler farming with 900,000 broiler chicks placement per month at West Godavari, Prakasham, Krishna and Guntur Districts in Andhra Pradesh.
3. Feed plant with 4,000 tones production per month at Chilakaluripeta.
4. GBR Associates as distributors of Venkys India, B.V Biocorp and Ventri Biologicals for Medicines, Vaccines and Feed supplements.
5. Own marketing of broiler birds under the brand GBR Chicken through 15 own outlets in Prakasham to East Godavari District in Andhra Pradesh.

Distributor of Venkys for Medicines, Vaccines & Supplements

G.B.R Associates are the Distributors of Vaccines, Medicines and Feed supplements for Venkys India, B.V Biocorp and Ventri Biologicals.

Big Dutchman supplied equipment

M. Narendra Babu, Director, G.B.R Hatcheries Pvt Ltd

and Gartech provided EC sheds to G.B.R Group.

Mr Bucha Rao was born in Satuluru, Narasaraopet district, Andhra Pradesh. He started his career in 1983 as sales representative in Venvet Chemicals and later joined Kranthi Hatcheries based at Challapalli. While working he also started a small farm with 600 birds in Challapalli in 1987 and made it 50,000 birds broiler farm in 1995 in leased sheds.

In 1996 Bucha Rao shifted to Vijayawada and started broiler farming in new and own sheds at Kantheru on Guntur road with 100,000 commercial broiler chicks. In 2005, he started broiler parents farm with 25,000 Vencobb breed in Hyderabad in partnership with two of his brothers Shankar Rao, Eshwara Rao, his wife Ms Lakshmi Tulasi, B. Sambasiva Rao, M. Narendra Babu and P.V Subramanyam. He also expanded broiler farming with 400,000 commercial broilers at Vijayawada surroundings.

Bucha Rao now has 100,000 broiler parents farm and 20 lakh capacity commercial broiler farms. He has monthly placement of 9 lakh broiler commercial chicks and also sell 9 lakh birds with 2.25 kg body weight each. In 2024, Bucha Rao started GBR Feeds near Chilakaluripet producing 4000 tons of pellet feed for own consumption. The company's head quarter is located at Vijayawada. The broiler parent farms are situated in Hyderabad while the commercial farms are located around Vijayawada.

Bucha Rao was happy to state that the mortality in his farms is 8 % on yearly average with an FCR of 1.6 and achieved 2.25 kg body weight in 42 days time. The broilers are marketed locally in Krishna, Guntur, Prakasham, West Godavari and East Godavari districts. 50 % of broilers produced in his farms are sold through his own outlets. To get early and prompt payment, he opted own marketing outlets. While 50 % of his production is sold through own outlets, the remaining 50 % are sold through traders in the 6 districts of Andhra Pradesh, said the soft spoken intelligent big Vertical Broiler Integrator Mr Bucha Rao.

To get early and prompt payment, GBR opted own marketing outlets. While 50 % of his production is sold through own outlets, the remaining 50 % are sold through traders in the promin6 districts of Andhra Pradesh, said the soft spoken intelligent big Vertical Broiler Integrator Mr Bucha Rao.

Bucha Rao was happy to say that no partner of his company left us, we are all together and growing in business. The new generation team joined us and we are confident of taking GBR Hatcheries Group to the next level and become stronger year after the year. We carefully select the raw material we use for nutrition to our birds.

During Covid time in 2020 broiler industry was totally washed away and sold broilers at INR 5 a kilo live weight. We faced bad time in 2006 due to bird flu, in 2020 due to Covid and during January–February 2025

B. Sambasiva Rao, Director, G.B.R Hatcheries Pvt Ltd

again due to bird flu. Except these three times, we are most comfortable with poultry farming in my career, said Mr Bucha Rao.

Heat Stress Management in Poultry

Dr B. C. Dutta

What is Heat Stress?

- A situation when chicken faces difficulty in achieving balance between body heat production & body heat loss
- Genetics, Feather cover, Age, Body Weight, Egg Production stage& flock maintenance all affect a chicken's heat tolerance
- Chickens are homeotherms & regulate their body Temperature across a wide range of external Temperature.
- But continuous high climate Temp overwhelm the thermoregulatory mechanisms, resulting imbalance between the amount of metabolic heat produced & their capacity to dissipate body heat in the environment

Key environmental factors contributing to Heat stress in poultry

- Consistent Global worming induced Temperature elevation
- Uprooting Trees & Deforestation in the name of urbanization
- Filling of waterbodies
- Indiscriminate Mining & Urbanization in Hills

Physiological Changes and Production Impact of Heat Stress

- Chickens lack sweat glands to facilitate latent heat loss by evaporation (perspiration), and have limited un-feathered body surface areas for loss of sensible heat through conduction, radiation, & convection
- With Increase in Climate Temp, the Thermal gradient between the Body surface & the surrounding environment lessens with dissipation of Heat decreasing, resulting chicken suffering from environment-induced Hyperthermia.
- This increases Respiratory rate (Thermal Polypnea or Panting) to increase Latent Heat Loss via Evaporation of water from the Respiratory tract
- Dehydration is the most harmful effect of panting, which causes Respiratory Alkalosis, acid base imbalance leading to permanent physiological damage
- Alkalosis reduces blood ionized Calcium and ultimately Eggshell mineralization resulting Reduced Egg production, Pale Egg, Soft Shell Eggs, Thin Shell Egg, Increased Broken egg % in Layer & Breeder
- Panting causes Oxidative Stress leading to Immunosuppression, ultimately inviting diseases
- Panting causes loss of energy leading to poor productivity in chicken
- Heat Stress impact the Expression of Gene related to Growth, Production Performance & Resistance to disease

Key signs of heat stress in poultry

- Panting
- Sitting with Wings spread to dissipate body heat by Convection
- Poor Feed Intake
- Increased water intake
- Enteritis
- Poor Body Wt gain, reduced Egg Production & Poor Egg shell quality
- Heat Stroke Mortality

Economic impact and productivity losses associated with heat stress

- Reduced Feed Intake
- Reduced Egg Production
- Reduced Egg Weight
- Poor Shell Quality
- Reduced Albumin Height in Egg
- Reduced Male Fertility
- Reduced Hatchability
- Poor Growth
- Cannibalism
- Respiratory Distress leading to Respiratory Infections like Colibacillosis, CRD, Coryza, ND, IB& Avian Influenza
- Immunosuppression resulting increased disease incident from existing microbes, especially the respiratory diseases like ND, Avian Influenza, IB, CRD, E coli, etc
- Heat Stress has Permanent damaging effect; damages the muscles affecting Meat Quality and Lowering Breast Muscle Yield
- Reduces Protein content of the muscles, reduction of muscle pH & Water Holding Capacity and ultimately affecting Juiciness of Chicken Meat
- Disturbs Lipid metabolism by affecting enzyme function in lipid breakdown causing Excess Fat deposition instead of converting to meat

Major Health risks of chicken during summer

- Immunosuppression and increased incidence of diseases from existing microbes, especially the respiratory diseases like ND, AI, IB, CRD, E coli, etc

- Oxidative Stress causes Gut Health Problem, reduced Digestion with Reduced Productivity
- Under Heat Stress, water intake increases leading to dilution of Nutrients inside intestinal lumen resulting mal-absorption and passage of nutrients into the hind gut
- This favours growth of undesirable microorganism, loss of microbial equilibrium in the gut, Dysbacteriosis, Enteritis, Watery dropping, Wet Litter condition, Ammonia accumulation resulting further increase in Humidity at the bird's level leading to increase discomfort level & dehydration. The chicken will consume more water and the condition aggravates in a cyclic manner (Vicious cycle)
- In closed EC house, with Increase in climate Temperature, control system is failing, especially with high Humidity outside. Evaporative Cooling & Tunnel Ventilation failed to maintain Comfort environment inside with rising Climate Temperature outside creating many Blank spot in the middle of EC house causing Breathing problem leading to Panting

Impacts on immunity, post vaccination response & disease susceptibility

- Heat stress impairs a chicken's immune system, leading to a reduced response to vaccines, suppressing the production of antibodies and affecting the function of immune cells, particularly lymphocytes, due to the atrophy of immune organs like thymus under high temperatures. Heat stress makes it harder for chickens to fight off infections after vaccination and increases their vulnerability to disease
- Heat stress can significantly lower the levels of circulating antibodies (like IgM and IgG) produced after vaccination, resulting in a weaker immune response against pathogens
- High Temp cause atrophy of thymus, leading to decreased T-cell production and impaired cell-mediated immunity
- Heat stress increases corticosteroid levels and thus the immune system.
- Heat stress disrupt the function of immune cells, macrophages & lymphocytes, affecting their ability to recognize and fight pathogens.
- Heat stress damage the intestinal lining, allowing harmful bacteria to enter the bloodstream, further compromising immune function

Monitoring Heat stress in poultry

- Difference in activity during Cool hours & Hot hours
- Posture of the birds
- Feed Intake with increasing Temperature
- Health status after Temperature increase
- Degree of Panting or Respiratory distress
- Egg Production & Egg Shell quality status with Increasing Temp

Poultry House Environmental modifications to combat Heat Stress

Poultry House Environment need to made near comfort zone in terms of Temperature Humidity & Ventilation. Closed EC house is the perfect answer for chicken. Alternative actions are:

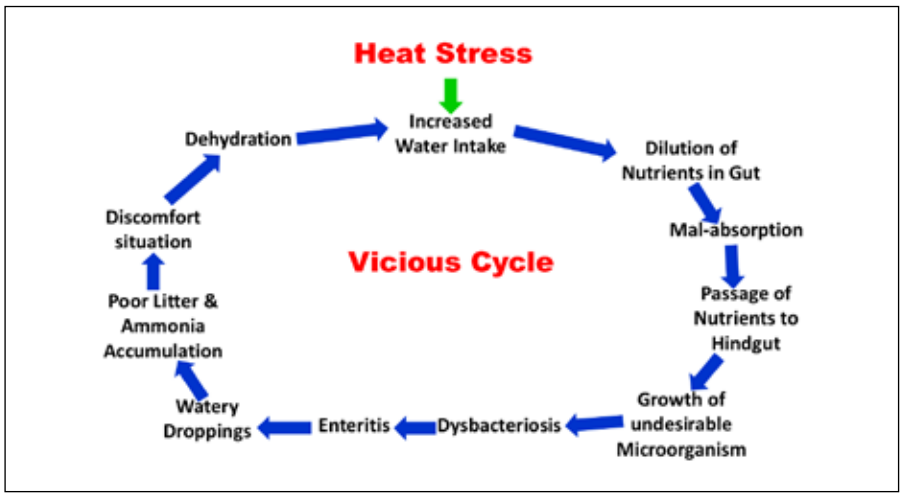
- Plantation of Tress on both side
- Farm construction near forest or under Coconut farming or any big trees
- Reduce Stocking Density
- In open house system action must be taken to REDUCE TEMPERATURE at Birdslevel through

1. Elevated Roof, increased centre height than standard practice
2. Coated Roofing materials (Tin or Asbestos) or thatched roof
3. Extended both side roof overhang to prevent entry of direct Sunlight
4. Thatching of Roof by Agricultural waste
5. False Ceiling by Thermostat Aluminium foil or agricultural waste
6. Constructing Side Pandals (Leaned Roof Over-hang 1 meter)
7. Hanging of Gunny with Dipper on both side during hot hours keeping ventilation on top
8. Ceiling fans in case of Broiler and Circulatory fans in Layer or breeder
9. Springler on Rooftop
10. Fogger inside the shed

Nutritional Modification to combat Heat Stress in Summer

1. Sodium bicarbonate

- **pH regulation:** When birds pant heavily in hot environments, birds lose carbon dioxide due to excessive Panting, leading to a rise in blood pH (alkalosis). Sodium bicarbonate acts as a buffering agent, providing bicarbonate ions that help maintain a balanced blood pH.
- **Improved feed and water intake:** Adding sodium bicarbonate to drinking water helps increase water consumption, which is vital



for heat regulation.

- **Enhanced growth performance:** Studies shown that supplementing sodium bicarbonate in the diet of heat-stressed poultry can improve body weight gain and FCR.
- **Eggshell quality:** For laying hens, sodium bicarbonate helps maintaining good eggshell quality as the bicarbonate ion is involved in shell formation.

2. Electrolytes

- Electrolytes help maintaining proper fluid balance and blood pH levels, which are significantly disrupted when chickens panting heavily in hot environments, leading to the loss of essential minerals like Na& K through their respiratory system
- Supplementing electrolytes in the drinking water can help replenish these lost minerals and alleviate the negative effects of heat stress

3. Vitamin C

- Antioxidant activity: Vitamin C scavenges free radicals generated during heat stress, protecting cells & tissues from Oxidative stress induced damage
- Immune system support: Vitamin C is vital for proper immune function, which can be compromised under heat stress.
- Hormone regulation: Vitamin C is involved in the synthesis of stress hormones, helping to manage their levels during heat stress.
- Improved performance: Supplementation with Vitamin C can lead to better growth rates, feed efficiency, and egg production & egg shell quality in heat-stressed chickens. Vit C helps maintaining sperm production in breeder male during summer stress
- Reduced oxidative damage: Heat stress can cause oxidative damage to the liver and other organs, which Vitamin C helps to mitigate.
- Blood pH regulation: Studies suggest that Vitamin C can help maintain proper blood pH levels, which can be disrupted under heat stress

4. Ginger, Turmeric few other herbs can help by reducing mortality, improving nutrient digestion, and stimulating the immune system

5. Vit A, D, E &Vit B Complex help reduces heat stress mortality

6. Vitamin E, Zn & Se can help mitigating heat stress with antioxidant parameter

7. Betaine help with reducing metabolic heat production thus helps reducing heat stress

8. Chromium

- Chromium enhances insulin sensitivity, allowing better utilization of glucose, crucial for energy production during heat stress when energy demands are high
- Chromium addition can lead to decreased levels of corticosterone, a stress hormone released in response to heat stress, thereby promoting a calmer physiological state
- Chromium as antioxidant, helps to combat oxidative stress caused by heat stress damaging cells and tissues
- Performance Improvement: by mitigating the negative impacts of heat stress on metabolism & stress response, supplementing chromium can positively influence growth rate, feed efficiency, and egg production in chicken

Drinking Water Management

- Cold drinking water supply 24 hours; the key of combating heat stress, can be ensured by
- Frequent filling of water tank, and not to allow water to become hot in tank
- Keeping water Tank under shed, even inside farm shed.
- Open Tank may be made white painted to reduce heating of water inside.
- Underground water pipeline from tank to farm shed
- Covering of external water pipeline by wet gunny during summer days
- For manual chick drinker, change water frequently

Heat Stress Mitigation Keys

- Reduce Temperature of Poultry house with available Infrastructure & inputs applying common sense
- Reduce Stocking density or allow more space to each birds
- Improve air movement at birds' level
- Increase nutrient density in feed, especially the micronutrients.
- Modify feeding practice towards cool hour feeding
- Supply cold drinking water 24 hours

Moisture as a Critical Determinant of Feed Hygiene and Safety: Implications for Microbial Control and Livestock Health

Mrs Yamini Sripal
Assistant Manager - Technical Services

Dr Jayanta Bhattacharyya
Director - Techno Commercial

The hygiene and safety of animal feed are of paramount importance in the broader context of animal health, productivity and food safety. Feed often serves as a reservoir and transmission vector for a variety of microorganisms, many of which originate or proliferate during storage. Environmental fluctuations such as irregular precipitation, extended droughts and shifts in temperature and humidity compromise the integrity of feed drying and storage processes. These external conditions, combined with intrinsic feed characteristics (e.g., pH, oxygen levels, nutrient profile and moisture content), form a complex ecosystem that can foster microbial contamination.

Among these variables, **moisture** stands out as a critical factor. While a certain baseline moisture is necessary for processing and animal consumption, elevated levels directly influence microbial growth and toxin production, ultimately affecting the health and performance of livestock.

Moisture and Microbial Dynamics in Feed

Microbial activity in feed is directly influenced by moisture content, particularly by the amount of free water available, measured as water activity (a_w). Water activity above 0.70 can support the growth of spoilage organisms, while most molds and bacteria thrive at levels above 0.80 [EFSA, 2010]. High moisture levels increase the likelihood of microbial proliferation, especially in warm and humid climates where proper drying and storage are challenging.

To ensure quality, yield and profitability, feed manufacturers monitor moisture levels throughout all stages of processing, including raw materials, mash and pellets. Managing moisture is a persistent challenge due to variable climatic conditions, inconsistencies in raw material quality and technical limitations. The standard method for assessing water content is through measuring moisture content, typically expressed as a percentage of the feed's total weight. However, a more accurate indicator of microbial risk is water activity (a_w), which represents the amount of free water available to support microbial and biochemical activity. Microbial growth is minimal below specific water activity thresholds, but as water activity (a_w) rises, the risk of microbial contamination increases substantially (Roos, 2003). Lower water activity (a_w) correlates with enhanced feed stability and reduced microbial growth potential.

Dr Sushant Mhatre
AGM - Techno Commercial

Microbial Growth and water activity Dependence

Various microorganisms such as bacteria, yeasts and molds thrive under specific water activity and temperature conditions.

Maintaining water activity below 0.70 is, therefore, essential for minimizing microbial growth during storage and distribution phases [EFSA, 2010; FAO, 1999].

Factors Influencing Moisture-Driven Spoilage

Several factors interact synergistically to drive microbial proliferation in feed:

Water Activity (a_w)	Microorganism type
0.91	Gram-negative Bacteria
0.88	Yeast (Practical Limit)
0.86	Gram-positive Bacteria
0.80	Mycotoxins production
0.70	Molds (Practical Limits)
0.60	Absolute limits (all Organisms)

- **Temperature and Humidity**: Elevated temperatures cause water migration within feed particles; humidity contributes to condensation, both increasing free water availability.
- **pH and Oxygen Levels**: These support or suppress microbial metabolism depending on the organism type.
- **Storage Conditions**: Inadequate ventilation, poor insulation and improper packaging can exacerbate moisture retention.

The result is an environment ripe for microbial activity, leading to the degradation of nutrients, physical spoilage and toxic metabolite production.

Key Microorganisms and Associated Hazards

Molds

Species such as *Aspergillus flavus* and *Penicillium spp.* flourish in high-moisture environments, producing dangerous **mycotoxins** including aflatoxins and ochratoxins. These compounds have been associated with immunosuppression, hepatotoxicity, reproductive failure and poor growth performance [Whitlow & Hagler, 2005].

Bacteria

Pathogens such as *Salmonella spp.* and *Escherichia coli* may colonize improperly stored feed, particularly when moisture exceeds critical thresholds, increasing the risk of enteric diseases in livestock [Jones & Hagler, 2000].

Consequences of Excess Moisture in Feed

Consequence	Description
Spoilage and Nutrient Loss	Degradation of amino acids, lipids, and vitamins by microbial enzymes.
Mycotoxin Contamination	Production of aflatoxins, fumonisins, and zearalenone in moldy feed.
Livestock Health Risks	Immunosuppression, organ damage, reproductive disorders.
Reduced Performance	Decreased feed conversion ratios and weight gain in livestock.
Economic Losses	Higher veterinary costs, reduced productivity, feed recalls, and waste.

Safe Moisture Thresholds for Various Feed Types

Feed Type	Recommended Moisture Content
Cereal Grains	≤ 13–14%
Pelleted/Compound Feeds	≤ 12%
Silage and Fermented	Controlled via fermentation

Yeasts

Yeasts ferment residual sugars in moist feed, contributing to off-odors, clumping, spoilage and loss of nutritional value.

These limits are designed to restrict microbial proliferation while preserving palatability and digestibility.

Strategies for Moisture and Water Activity Control

To maintain hygienic conditions and inhibit microbial growth, the following measures are recommended:

Drying Procedures: Utilize appropriate post-harvest and in-process drying techniques.

Monitoring Protocols: Implement regular testing for both moisture content and aų at all stages—raw materials, intermediates and finished products.

Optimized Storage: Ensure feed is stored in clean, dry, temperature-regulated environments.

Preservatives: Employ antifungal agents, mold inhibitors, or organic acids to extend shelf-life.

Moisture - Resistant Packaging: Prevent external moisture ingress during handling and transport.

GMP Compliance: Regular sanitation and equipment maintenance to minimize cross-contamination.

Conclusion

Moisture is not merely a processing variable—it is a central determinant of **feed safety, microbial stability and economic viability**. Elevated moisture and water activity levels promote microbial proliferation and mycotoxin synthesis, compromising feed quality and animal health. Understanding and managing moisture dynamics—particularly through the lens of water activity—offers a powerful tool for reducing microbial risks. Through targeted drying, vigilant monitoring and stringent storage controls, stakeholders can safeguard feed hygiene, optimize animal productivity and protect public health.

*References can be given on request**

Water Activity Testing

Leg weakness in commercial broilers

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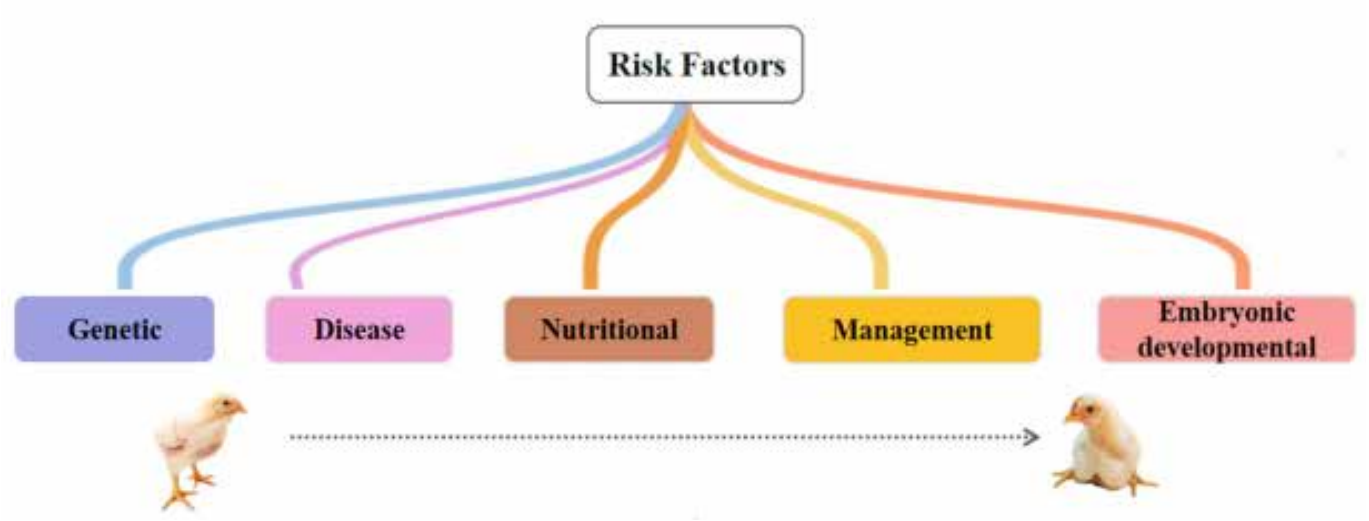
Poultry is one of the fastest growing segments of agricultural sector and providing a vital source of protein and income for millions worldwide. Leg problems are one of the most prevalent and serious health concerns in poultry. For heavy meat-type birds such as broiler chicken, the problems become very complex since the birds gain more weight quickly than they develop the bone structure needed to support its body weight.



Leg weakness:

The term leg weakness includes all forms of lameness in addition to any physical abnormality of the leg which may be detrimental to the birds performance. Clinical symptoms are mostly characterized by reduced walking ability, unstable standing, frequent squatting or lameness. Lame broilers cannot walk easily and unfortunately, they cannot reach the feeder and drinker when they are hungry or thirsty. Leg weakness leads to high incidence of morbidity than mortality. Leg problems in broilers can arise from infectious and non-infectious causes, leads to significant health and welfare issues for the birds.

Risk factors of leg problems:

1. Genetics
2. Disease
3. Nutritional
4. Managemental
5. Embryonic developmental factors.

1. Genetic factors:

- Selective breeding for rapid growth and increased body weight often leads to excessive stress on the skeletal system.
- Maintaining genetic diversity is crucial for improving overall health and resilience against leg issues.
- Utilizing genomic tools to identify and select against genetic predispositions to leg disorders.

2. Disease factors:

- Disease factors that cause leg diseases in broiler chickens include viruses, bacteria, fungi and parasites, all of which can affect leg health in broilers.
- Mycotoxicosis negatively affects phosphorus metabolism and bone mineralization in broilers. In particularly, Aflatoxin exposure weakens the tibia and increases leg torsion.
- Parasites compete for nutrients, impairing digestion and absorption, leading to nutritional deficiencies and higher risk of leg diseases.

A.P. POULTRY EQUIPMENTS

Pioneers in Poultry Incubators

HI-TECH INCUBATORS & HATCHERS

Killer Cone / Halal Cutting

De - Feathering Machine:

Chicken Portioning Machine

Feed Plant (Feed Mixer & Grinder)

Solar Incubators

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Viral Disease	Causative agent	Transmission	Symptoms
Marek's Disease	Herpes virus	Direct contact, feather dander.	Leg paralysis (one leg forward, one backward)
Avian Encephalomyelitis (AE)	Picornavirus	Vertical (eggs), horizontal	Tremors, weakness, unsteady gait, leg paralysis
Newcastle Disease	Paramyxovirus	Airborne, contaminated feed/water	Nervous signs, leg and wing paralysis, twisted neck
Avian Reo virus	Reo virus	Faecal-oral, mechanical vectors	Viral arthritis, swollen hocks, lameness

Bacterial Disease	Causative agent	Transmission	Symptoms
Bumble foot	Staphylococcus aureus	Skin wounds, dirty litter, hard surfaces	Swollen, painful footpad abscesses.
Mycoplasma synoviae	Mycoplasma synoviae	Direct contact, eggs (vertical), airborne.	Swollen joints (hock, foot)
Bacterial Chondronecrosis	Staphylococcus aureus	In Damaged cartilage, bacteria travel from the gut into the bloodstream.	Arthritis, swollen joints, lameness
Salmonellosis (Pullorum Disease)	Salmonella Pullorum	Vertical (eggs), direct contact	Swollen hocks, white diarrhea

Fungal Disease	Causative agent	Transmission	Symptoms
Aflatoxicosis	Aspergillus flavus	Ingestion of aflatoxin-contaminated feed	Lameness, poor coordination, joint degeneration
Scaly Leg Mite	Knemidocoptes mutans	Direct contact, contaminated surfaces	Raised, crusty scales on legs, lameness, irritation
Coccidiosis (Severe)	Eimeria spp.	Fecal-oral, contaminated litter	Reluctance to move (secondary leg issues)

3. Nutritional factors:

Balanced Diet:

Deficiency of manganese, zinc or water-soluble vitamins can cause valgus deformities.

Vitamin Deficiencies:

- Vitamin D3 deficiency causes Rickets and it leads to soft bones and lameness in chicks Riboflavin deficiency causes curled-toe paralysis, straddle legs.
- Biotin deficiency can lead to footpad dermatitis.

Excess Protein:

- Excess protein content in feed, especially animal protein, leads to impaired purine metabolism in the body.
- This results in the conversion of purines into large amounts of uric acid and urates, which are deposited in internal organs and joints.
- This can cause swelling and deformation of the toes and leg joints, leading to lameness.

Calcium and Phosphorus:

- Deficiencies in Ca and P lead to chondroplasia or osteoporosis, affecting bone development.
- Proper levels are essential for strong skeletal growth in fast-growing broilers.

Curled toe paralysis

Perosis

4. Management factors:

a) Slippery floor surfaces:

The biggest problem with slippery surfaces is straddled legs or splayed legs.

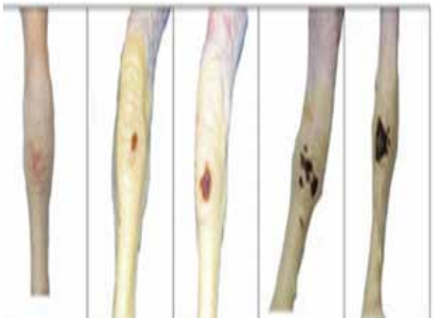
b) Insufficient feeder and drinker space:
Crowding at feeders and waterers tends to put undue stress on the birds legs and it leads to hock disorders.

c) Wet Bedding Material (litter):

- Broiler chickens raised on wet or poorly managed litter often develop tender footpads due to prolonged exposure to moisture and irritants. This can lead to conditions such as footpad dermatitis, swollen hocks, and breast blisters especially when birds rest frequently on damp surfaces.
- In severe cases, cracked footpads become entry points for infection, resulting in bumble foot (a painful, pus-filled swelling that causes lameness).
- Maintaining dry, clean litter is essential to prevent these welfare and performance issues.

d) Improper Equipment:

To prevent leg injuries in young poultry, it's important to ensure that mesh wire brooders have small enough gaps to avoid birds getting their hocks stuck



5. Embryonic developmental factors:

1. Embryonic development is completely dependent on the nutrients stored within the embryonated eggs laid by the hen, such as vitamin D3, minerals and fatty acids.
2. Poor incubation temperature and ventilation can also affect the intake of nutrients from yolk during embryonic development.

Technical diagnosis of leg weakness:

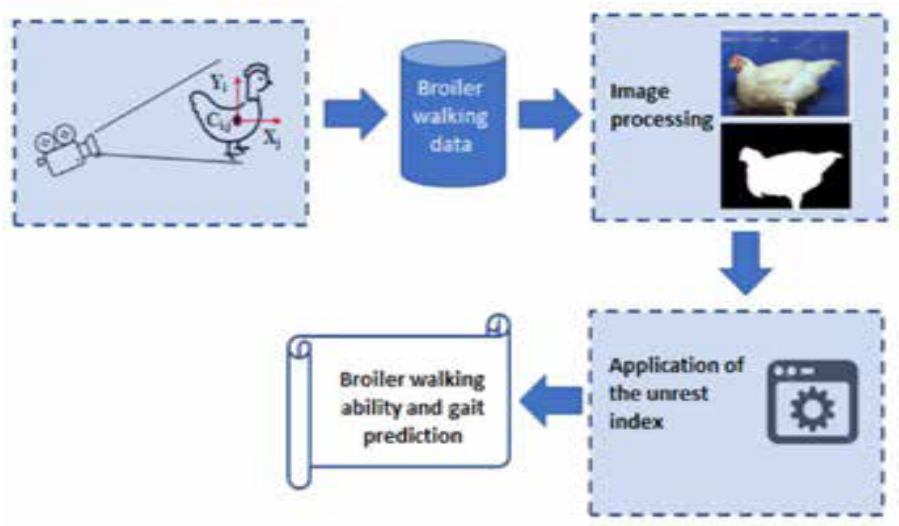
- Gait score
- Kinematic analysis
- Infrared thermography
- Motion sensors

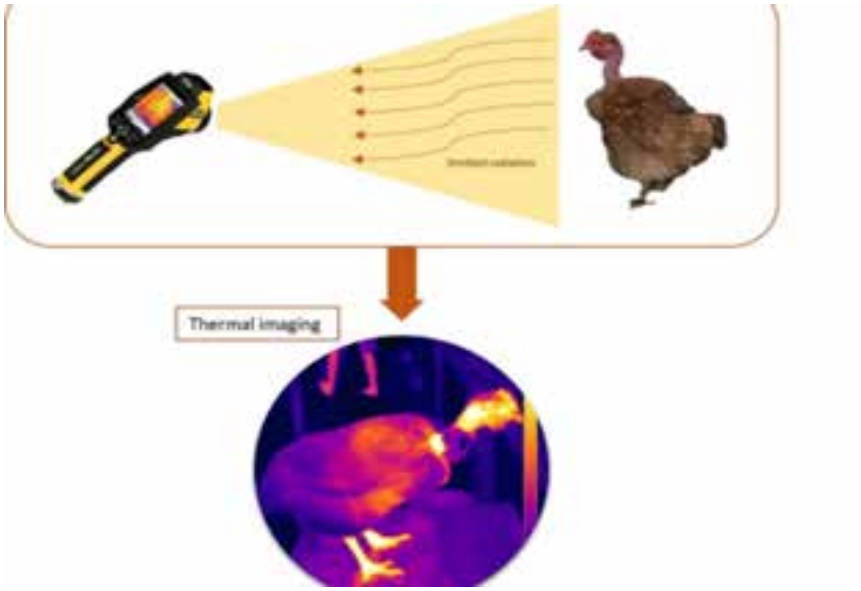
Gait score:

1. The first manual method to assess gait problems in broilers involves visually scoring their walking ability.
2. A score is assigned ranging from zero (no leg problems) to five (completely paralyzed) according to the criteria as follows.
   - 0 (healthy broiler)
   - 1 (the broiler moves fast, but there is a slight walking deficiency)
   - 2 (the broiler moves fast, but significant walking deficiency is observed)
   - 3 (the broiler moves fast, but there is a significant deficiency)
   - 4 (the broiler cannot move fast and there is a serious difficulty)
   - 5 (the broiler cannot move anymore).

Kinematic analysis:

- Kinematic analysis is a valuable tool used to study the movement patterns of poultry legs to detect gait abnormalities and leg disorders early.
- By capturing and analysing video footage of birds walking, researchers can measure parameters like joint angles, and walking speed.



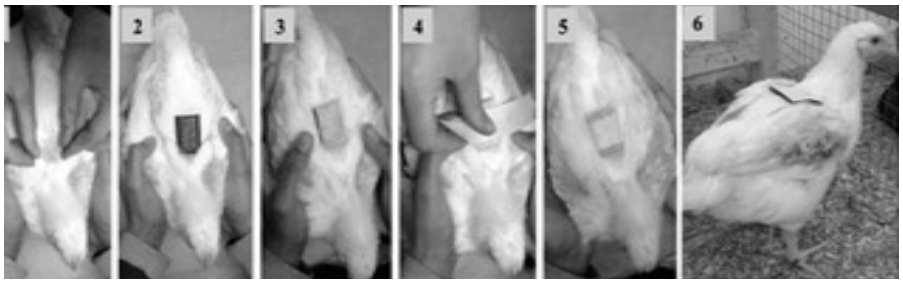


Infrared Thermography:

- Infrared Thermography (IRT) or thermal imaging can be a valuable tool for detecting and monitoring leg problems in poultry, particularly Bacterial Chondronecrosis with osteomyelitis.
- IRT measures surface heat and increased or decreased temperatures in specific areas can indicate inflammation or decreased blood flow, which are often associated with leg disorders.

Motion sensors:

- Motion sensors (wearable devices and cameras) help to monitor leg health by tracking movement and gait. They detect uneven foot pressure, measure walking speed and assess lameness severity by observing how often birds lie down.



Treatment for leg weakness:

It includes dietary adjustments, medications and supportive care like proper management practices. In severe cases, it is essential to consult a veterinarian for proper diagnosis and treatment.

Conclusion:

"Healthy Legs, Healthy Birds, Higher Yields!"

Leg problems in poultry result from a combination of nutritional, environmental, genetic, and disease-related risk factors. Using advanced technical analysis tools like gait scoring, kinematic studies, infrared thermography, and motion sensors enables early detection of leg problems. Proactive monitoring and addressing key risk factors are essential to improve bird welfare, reduce lameness, and boost productivity in poultry farms.

Challenges in Poultry Production System in Telangana

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Telangana is one of the major poultry producing states of the country. It has 9.39 % (80 million) of poultry population of the country (2019) in which 17.54 million poultry reared in backyard and 62.46 million in commercial poultry production system. Telangana produce about 18.4 billion eggs annually (12.88% of India) and ranked 3rd and 5.1 lakh ton of chicken meat (10.16 % of India) and ranked 5th in the country. On an average daily 5.04 crore eggs and 1397.2 tonne of chicken meat by slaughter of 10.1 lakh chicken/day is produced in the state. In Telangana, the per capita availability of egg and chicken meat was 483 eggs and 29.21 kg during 2023-24. Despite of impressive growth, commercial as well as backyard poultry farmers faces many challenges in the value chain of poultry production. In the present study the challenges in poultry production system are analyzed based on interface meeting with stakeholders at Warangal and Adilabad districts of the state.

Scientist addressing to backyard poultry farmers at Utnoor, Adilabad Dist.

- **Commercial poultry producers face issues of disease diagnostic, vaccine, herbal antimicrobial growth promoters, laboratory for feed profile analysis, cold-chain, disposal of dead birds, market and price volatility**
- **Backyard poultry farmers faces issue of space, finance, chicks, health support, institutional support, capacity development, marketing o f produces**
- **Government supports needed for both the sectors for sustainable development of poultry in the state.**

Poultry population status in Telangana

State comprises 9.76 % of chicken population and 14.38% quail's pupation of the country along with other poultry species. Commercial poultry population is about 3.6 times higher than the backyard poultry population in the state. Quails, Duck, turkey and other poultry species are also present in the state. Details are given in Table 1.

Challenges in commercial poultry production

About 110 commercial poultry farmers of the districts, Officers of State Veterinary Department, faculties of Livestock Research Station, Mamnoor, Warangal (P. V. Narasimha Rao Telangana Veterinary University) and other stakeholders were present in the meeting. Poultry farmers highlighted some important challenges faced by them. The details are given below.

A. Health related issues

- Lack of disease diagnostic facility,
- Lice problems in commercial farm,

Table 1. Poultry population status in Telangana (million) based on 2019 Livestock Census

Poultry	Chicken			Duck	Turkey	Quails	Other	All poultry
	Desi	Improved	Total					
Backyard	15.32	2.07	17.39	0.05	0.01	0.05	0.05	17.54
Commercial	14.06	47.40	61.46	0.00	0.00	0.93	0.06	62.46
Total	29.37	49.47	78.84	0.05	0.01	0.98	0.11	80.00

Scientist addressing to backyard poultry farmers at Utnoor, Adilabad Dist.

- Non-availability of important vaccines,
- Non-availability of herbal Antimicrobial Growth Promoters (AGPs) etc

B. Nutritional support system

- Lack of laboratory facility to get nutritional profile of feed

C. Common Management issue

- Facility of cold-chain,
- Disposal of dead birds,

D. Policy issues

- Market volatility of inputs as well output
- Pricing mechanism of eggs and broiler

Major challenges among commercial farmers were health related issues. They are not getting accurate diseases diagnosis on time and it led to heavy economic losses. Non-availability of important vaccines and herbal AGPs are major constraints expressed by the farmers in quality egg and chicken production. Farmers also expressed the lack of laboratory facility to assess the nutritional profile and to check the quality of feed and other feed ingredients routinely. Price volatility specially feed ingredient price creates major impact on the farm economically. They expressed the urgent need to establish a cold-chain facility and also a proper mechanism for disposal of dead birds to prevent spread of communicable diseases.

Challenges in backyard poultry production

In collaboration with District administration of Adilabad, a meeting with 136 backyard poultry farmers specially women, Officers of line departments, Extension Officers and other stakeholders organized at Integrated Tribal Development Agency (ITDA) Utnoor, Adilabad, Telangana. In the meeting backyard poultry farmers raised following issues:

A. Farmers Personal and Management issues

- Lack of sufficient space to provide proper house to birds,
- Lack of sufficient money to invest in poultry production
- Predator attack on birds

B. Institutional issues

- Non-availability of suitable chicks,
- High feed cost,
- Lack of veterinary help,
- Non-availability of vaccine in smaller doses
- Lack of Capacity development programs

C. Health issues

- Fowl pox and cannibalisms in adult birds,
- High mortality in chicks

D. Policy issues

- Lack of regular marketing channel for poultry produce specially eggs on desired price.

The backyard poultry farmers of Adilabad district are mostly tribal who are resource poor and they have limited scope to get benefit from the different stakeholders. Space was the major constraints for the backyard poultry farmers as expressed by the farmers. Famers did not have sufficient money to invest in the poultry production and need institutional support for their socio-economic upliftment. They also did not get proper health support and vaccination to save the birds during disease conditions. Due to poor knowledge and poor health support system farmers faces high morbidity and mortality in different age groups of birds. Marketing of eggs throughout the year is difficult on good prices and seasonal variation was observed. Due to low demand in summer season they face lot of problem in selling the eggs.

Poultry production is one of the important sectors in the state which needs support from the Govt. Commercial and backyard poultry farmers have different types of challenges. Policy makers and implementing agencies should focus on their problems and find solutions that should be sustainable. To make sustainable growth in the sector special focus should be given on backyard poultry production system.

Scientist addressing to Commercial poultry farmers at Warangal

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