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Inside...

Doug Winter, Chairman, USSEC

A view of participants along with USSEC Chairman Doug Winter and the Speakers in the two days Aqua Tech Talks, Nutrition Workshop held in Hyderabad, India on February 21 & 22, 2023.

Objectives of USSEC are centered around three main pillars of their strategic plan:

1) To differentiate the quality and value of U.S. Soy from other nutrition and energy products.

2) To elevate preference for U.S. Soy in existing and developing global markets.

3) To attain market access for U.S. Soy through cooperation with a variety of global stakeholders.

We, USSEC, strive to do this by delivering world-class performance, acting responsibly, fostering our diversity and trusting in our team. One of our guiding principles is listening to our customers and advocating their needs to the industry, said Mr Doug Winter, Chairman, USSEC Board in an interview to M.A. Nazeer, Editor, Poultry Fortune.

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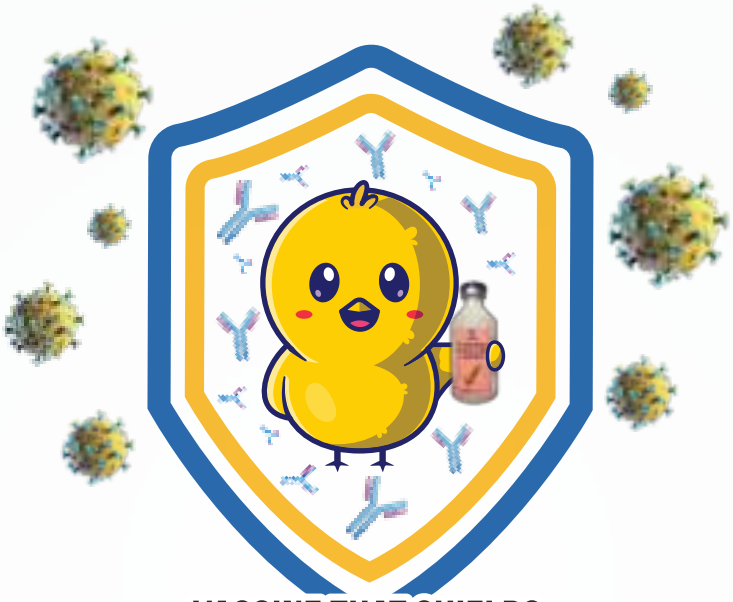

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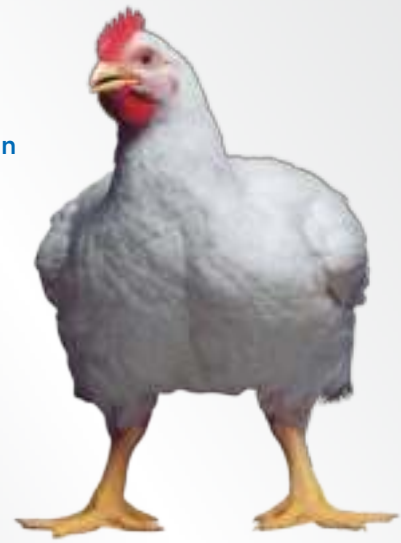

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M. A. Nazeer

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U.S.A produced about 120 million MT of soybeans, while India's output 14 million MT

3 Things to do in Summer to overcome Production Loss and Mortality, as the sun rises high and the days stretch long, the cornerstone of modern agriculture, the poultry industry face a season of despair. To address these challenges, farmers must be diligent in their understanding of the three consequences of heat stress which impacts the health and productivity of birds. They also should be aware of management practices and steps to mitigate the impact of heat stress on their flocks.

Dear Readers,

The March 2023 issue of **Poultry Fortune** is in your hands. In the news section, you may find news about ....

As part of its commitment to the global aquaculture industry through consistent leadership, collaboration and support, U. S Soybean Export Council (USSEC) South Asia and Sub Sahara Africa region (SASSA) organized a two days' workshop on Nutrition as a part of the project Aqua Tech Talks at Hyderabad, India on February 21 and 22. The event focused on highlighting and informing key industry leaders about the differentiating advantages of using U. S Soybean Meal as a key protein source ingredient in fish and shrimp feed. USSEC put together a line-up of prolific global experts who educated the audiences about different aspects of fish and shrimp farming along the entire production chain, while emphasizing on the use of good quality feed, latest innovations and technologies like precision feeding to ensure optimum end product output. The speakers also demonstrated the unique attributes of U.S Soybean meal which includes high nutritious value, high protein density, high digestibility and high amino acid profile to yield rapid fish growth.

The U.S. produced about 120 million MT of soybeans last year and exported about 60% of that total in the form of soybeans, meal or oil. India was the largest single market for U.S. Soybean oil in MY 21/22. India produced around 14 million MT of soybeans and will export some meal in the months right after harvest and possibly import meal back later in the year.

The objectives of USSEC are centered around three main pillars of their strategic plan: 1. To differentiate the quality and value of U.S. Soy from other nutrition and energy products**. 2.** To elevate preference for U.S. Soy in existing and developing global markets**. 3.** To attain market access for U.S. Soy through cooperation with a variety of global stakeholders. We, USSEC, strive to do this by delivering world-class performance, acting responsibly, fostering our diversity and trusting in our team. One of our guiding principles is listening to our customers and advocating their needs to the industry, said Mr Doug Winter, Chairman, USSEC Board in an interview to Poultry Fortune editor.

Suresh Rayudu Chitturi, Vice Chairman & Managing Director of Srinivasa Farms Pvt Ltd became the first Chairman of Indian American International Chamber of Commerce (IAICC) Hyderabad Chapter. IAICC provides a sustainable platform and leadership forum for entrepreneurs, professionals, businesses and governments in the United States and India to interact, exchange and promote economic development and improve relationship between U.S., India and rest of the world. As a part of their growth strategy, IAICC recognised Hyderabad's importance and IAICC Hyderabad Chapter was inaugurated on 13 February 2023. Mr Rayudu already worked as CII Chairman - Combined AP and as also Chairman, International Egg Commission. His global outlook and industry exposure will benefit this IAICC Hyderabad chapter in fulfilling its mission.

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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CLFMA OF INDIA elected it's new leadership team on 16 February 2023 for the period 2022-2024 **Following Office Bearers were elected:** Chairman - Suresh Deora, Deputy Chairman - Sumit Sureka, Dy. Chairman - Divya Kumar Gulati, Dy. Chairman - Naveen Pasuparthy, Dy. Chairman - Sandeep Kumar Singh, Hon. Secretary - Abhay Shah, Treasurer - Nissar F. Mohammed, Immediate Past Chairman - Neeraj Kumar Srivastava and Executive Director - Chandrika Venkatesh.

Dr Chandan Prasad, Product Line Specialist, Cargill Animal Nutrition, wrote an Open Letter to Mr Narendra Singh Tomar, Minister of Agriculture & Farmers Welfare, Govt of India with Subject: *Request for framing policy on producing quality DDGS*. In the last few years, Indian livestock sector has been witnessing a bumpy ride with skyrocketed prices of raw material like maize and soya. This has put negative pressure on the margins of this industry that contributes more than 4% of national GDP. Several geo-political issues take the centre stage that bring these dramatic shifts. At one side, political conflict in Eastern Europe created vacuum of feed ingredients globally, inflation was put on fifth gear by OPEC decision to cut down crude oil production on the other side. We would like to make it clear that objective behind this letter is not to propose for any kind of discount or subsidies. In fact, we perceive this difficult situation as an opportunity to introspect our practices and find out scope for improvement in our operational efficiencies and bring down losses. This introspection had showed us a way forward. Originated as a co-opportunity with one of the Govt's most ambitious project of alternate fuel, this has potential to ensure better sustainability in livestock farming and generating export income as well. Cargill Specialist sought the kind attention of the Minister towards this opportunity and resolve the crisis situation.

Dr A.E. Kumar, COO, NECC, wrote a book *"Connecting Fables with the Corporate World"*. In this book he has co-related his vast corporate experience with the fables / stories he has come across. Dr Kumar has exposure across the industries like banking, poultry, pet animal food and hire purchase. The author has penned 54 stories he has come across in five divisions, viz., Self, Peers, Boss, Work Environment and Entrepreneurship, and related those stories with incidents that have happened in his corporate journey. The author has also asked the readers to write their morals and their relatable happenings. It gives an attachment to the readers with this book from the beginning to the end. He appealed to employees to continue with the employer and grow with him, and to the employer to value the employee's integrity over performance. This book is worth reading by existing executives and MBA students to understand the dynamics and how to live in the corporate world.

In the Articles section – *3 Things to do in Summer to overcome Production Loss and Mortality,* *authored by* **Dr Sathya Sooryan** and **Dr Sanjay** said that as the sun rises high and the days stretch long, the cornerstone of modern agriculture, the poultry industry face a season of despair. Summer, with its sweltering heat and endless sunshine, presents a myriad of challenges to the commercial poultry farms, which provides a significant source of protein to populations around the globe. As temperatures rise, the heat has a serious impact on the health and productivity of the birds leading to profound impact on profitability of commercial poultry farms. To address these challenges, farmers must be diligent in their understanding of the three consequences of heat stress which impacts the health and productivity of birds. They also should be aware of management practices and steps to mitigate the impact of heat stress on their flocks. This article focuses on three core areas and addresses varieties of challenges faced by commercial poultry due to heat stress.

Another article titled ***Need of Enzymes in Poultry Production,*** *authored by* **Dr Sharad Durge** informed that a chicken has a very simple digestive system. The chicken digestive system comprises the beak, mouth, oesophagus, crop, proventriculus, gizzard, small intestine, colon and cloaca. The digestive system, the salivary gland, the liver and the pancreas help digest the food, and the residual wastes are eliminated from the body. The digestive system is responsible for ingesting food, its breakdown into its constituent molecules and absorption into the bloodstream and waste elimination. Since the chicken has a simple digestive system, the diet must be high quality and easily digestible to attain optimum and productive performance. Feed costs can be optimised using the nutrient availability matrix value. Exogenous enzymes are a boon to the feed industry in the current scenario of rising raw material prices. Using exogenous enzymes in feed helps achieve better FCR, uniformity in the flock, improved health, better use of cheap feed ingredients and reduced feed cost.

Article titled ***Poultry Sector Growth in India and Modern Poultry Farming Innovations,*** *authored by* **Dr Rambabu.D** discussed that the majority of poultry farms are located in rural areas, which is helpful for the development of rural areas, yet 37% of all rural chickens are raised using a backyard poultry farming approach. This is a barrier to increased poultry farming earnings since, in comparison to commercial poultry farming, backyard poultry farming does not fully utilize available resources. Chicken farmers have a tonne of opportunities because roughly 95% of the poultry industry is wet, which means that consumers consume the meat unprocessed and in raw form. The export of poultry meat, which has not been fully exploited until now, can expand significantly with processing and diversification. With time, poultry farming has greatly advanced thanks to the persistent efforts of farmers and experts. Through efficient resource management, poultry producers can boost their earnings by utilizing a number of cutting-edge technologies.

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Suresh Rayudu becomes first Chairman of IAICC, Hyderabad Chapter

IAICC: Indian American International Chamber of Commerce was founded in 1990 in Washington DC, with the core purpose of promoting and fostering economic development of the United States of America, Republic of India together with the rest of the world for the benefit of all.

K.V. Kumar, Executive Chairman, IAICC, speaking

Towards the above purpose, IAICC provides a sustainable platform and leadership forum for entrepreneurs,

Vagish Dixit, Chairman of CII, Telangana, speaking

professionals, businesses and governments in the United States, and India to interact, exchange and promote economic development and improve relationship between U.S., India and rest of the world. As a part of their growth strategy, IAICC recognised Hyderabad's importance and IAICC Hyderabad Chapter was inaugurated on 13 February 2023.

Mr Suresh Rayudu Chitturi, Vice Chairman & Managing Director of Srinivasa Farms Private Limited has been chosen as the first Chairman of IAICC Hyderabad Chapter. Mr Rayudu already worked as CII Chairman - Combined AP and as also Chairman, International Egg Commission. His global outlook and industry exposure will benefit this IAICC Hyderabad chapter in fulfilling its mission.

Suresh Rayudu addressing the media

The inaugural function was graced by:

1. Mr Jayesh Ranjan, IAS, Principal Secretary, ITE&C, Government of Telangana.
2. Mr K.V. Kumar, Executive Chairman, IAICC.
3. Mr Vagish Dixit, Chairman of CII, Telangana.

Mr Suresh Rayudu was announced as Chairman, IAICC Hyderabad Chapter during the Inaugural Function held at Hotel Marigold, Hyderabad, which was attended by prominent business and industry personalities.

Jayesh Ranjan, IAS, Principal Secretary, ITE&C, Government of Telangana, addressing

New Leadership Team at CLFMA OF INDIA 2022-2024

Suresh Deora, Chairman, CLFMA Office, Sumit Sureka, Divya Kumar Gulati, Naveen Pasuparthy, Sandeep Kumar Singh, Abhay Shah and Nissar F. Mohammed

Mumbai: CLFMA OF INDIA is a Non-Profit Organization and an Apex Chamber, nurturing "One Voice" of the Livestock Industry.

It was formed in the year 1967 with the objective of helping the promotion of overall animal husbandry, including the promotion of the concept of balanced feeding of animals in accordance with their nutritional requirements for deriving from them maximum output through productivity improvement. It was broad-based to include members from all sectors of livestock production during 2002.

CLFMA has a membership base of around 250 numbers representing Dairy, Aqua, Poultry and other sectors related to the Indian Livestock Industry viz. manufacturers and suppliers of feed additives, raw materials, feed plant and machinery, Laboratory equipment and also breeders, integrators, meat processors and exporters, vaccine manufacturers, animal health, etc.

On 16 February 2023, CLFMA's Election was held in the Extra-Ordinary General Meeting (EGM) and the new leadership team took charge for the period 2022-2024. The outgoing Chairman Mr Neeraj Kumar Srivastava, Managing Director, South Asia and South – East Asia, Novus International, expressed his appreciation and conveyed his best wishes to the new team led by Mr Suresh Deora, Director – S.A. Pharmachem Pvt Ltd, who got elected as the new Chairman of CLFMA OF INDIA for the period 2022 – 2024.

Mr Neeraj Kumar Srivastava outgoing Chairman said that, it was indeed a great pleasure to work with CLFMA as a Chairman and after two years CLFMA has decided to appoint Mr Suresh Deora, who is an accomplished, talented business leader having a vast experience in managing the businesses of Livestock Sector as a whole and is actively involved into Human and Animal Nutritional business.

Mr Suresh Deora, is also the Chairman of Indian Red Cross Society – Mumbai, President and Trustee of KARM, Honorable General Secretary of India – China Chamber of Commerce and Industry. He presides over many education institutes. He is a well-seasoned and networked businessman

CLFMA Managing Committee 2022-2024

connected with many industry stake holders including government authorities, BIS, FSSAI, etc and under his Stewardship, we anticipate CLFMA would continue to grow to greater heights.

He thanked Mr Neeraj Kumar Srivastava and CLFMA and said that, it was a great honour to be appointed as Chairman in a renowned association like CLFMA, as it is the single leading voice of the Animal Husbandry Industry. He promised to do his level best to help CLFMA work for the benefit of its members and the industry at large. He added that he was truly honoured and thrilled to carry the great legacy of many distinguished leaders, which has served the livestock industry for more than 5 decades. He promised to do his level best towards building the visibility of CLFMA, its image & reputation and working towards betterment of the livestock industry. He also said that Mr Neeraj Kumar Srivastava's team has done a great job especially with regard to government engagements and conducting relevant seminars during his tenure.

Following Office Bearers were elected for the period 2022 – 2024

1. Chairman: Mr Suresh Deora, S. A. Pharmachem Pvt Ltd
2. Deputy Chairman: Mr Sumit Sureka, Shivshakti Agro (India) Pvt Ltd
3. Deputy Chairman: Mr Divya Kumar Gulati, Nurture Aqua Technology Pvt Ltd
4. Deputy Chairman: Mr Naveen Pasuparthy, Nanda Feeds Pvt Ltd
5. Deputy Chairman: Mr Sandeep Kumar Singh, Godrej Agrovet Ltd
6. Honorable Secretary: Mr Abhay Shah, Spectoms Engineering Pvt Ltd
7. Treasurer: Mr Nissar F. Mohammed, Coastal Exports Corporation
8. Immediate Past Chairman: Mr Neeraj Kumar Srivastava, Novus Animal Nutrition (India) Pvt Ltd
9. Executive Director: Ms Chandrika Venkatesh

The other members of the Managing Committee 2022 - 2024 comprises of:

10. Dr Prashant Shinde: Cargill India Pvt Ltd
11. Mr Anil M: KSE Limited
12. Dr Devender Hooda: Huvepharma SEA (Pune) Pvt Ltd
13. Mr R. Ramkutty: Niswin Enterprises
14. Dr Saikat Saha: Evonik India Pvt Ltd
15. Mr Ramakanth V. Akula: The Waterbase Limited
16. Mr Vijay Bhandare: Bhavani Agrovet Pvt Ltd
17. Mr Abhay Parnerkar: Godrej Tyson Foods Ltd
18. Mr R. Lakshmanan: Shanthi Feeds Pvt Ltd
19. Mr Balaram Bhattacharya: Indian Herbs Specialities Pvt Ltd
20. Mr K. Narender Reddy: Natural Remedies Pvt Ltd
21. Dr Anup Kalra: Ayurvet Limited
22. Dr Vijay Makhija: Intervet India Pvt Ltd
23. Mr Jaison John: U. S. Soybean Export Council, Inc

Aviagen India's Venkatesh Gunasekaran Strengthens Global Nutrition Team with Expertise, Passion and Commitment

Udumalpet: Aviagen India is pleased to announce that Venkatesh Gunasekaran, Technical Manager for Aviagen India since 2020, has been appointed to Aviagen's Global Nutrition Team. This team is dedicated to promoting bird welfare, sustainability and performance through optimal nutrition. In this new role, he will share the latest nutrition advice with customers across India, as well as with his colleagues at Aviagen India.

Venkatesh Gunasekaran

"Good nourishment from the start of a bird's life is vital. I am excited to join the Global Nutrition team, as this role will allow me to make a difference by helping to continually improve the health and robustness of both our internal flocks and the birds we provide to poultry producers," commented Venkatesh.

Marc Scott, Business Manager for Aviagen India, added that this appointment is a recognition of the considerable talent within the India team. "Aviagen India realizes that to breed the best, we need the best and we therefore seek to expand our operations with the industry's most insightful, bright and passionate poultry professionals. With his background and insight, Venkatesh will greatly benefit our customers, as well as our internal teams in their efforts to strengthen the poultry industry throughout the country." Venkatesh will report directly to Marcelo Silva, Aviagen's Global Head of Nutrition Services.

"We welcome Venkatesh to the Global Nutrition team. He will be a valuable asset to our team as we work to enhance bird health, welfare and sustainability through good nutrition. Through this mission, we promote the economic sustainability of our customers and their ability to feed the world," concluded Marcelo.

INTERFACE

RECRUITMENT

Interface Pharmaceuticals Pvt. Ltd., over 23 year company in poultry and livestock sector, and an industry leader in providing effective Immunomodulators, growth enhancer are looking for dynamic people to join under its future market expansion program. The vacancies open for recruitment are as follows:

JOB PROFILE NO. 1

Designation	Headquarter	Experience Required	Minimum Qualification	CTC
General Manager	Delhi	20 - 25 year (in poultry supplements and nutraceutical Sales)	B.V.Sc. / M.V.Sc. (Nutrition) or any equivalent degree	Perks and Salary are better than MNC's. Attractive Incentives and other benefits.

JOB PROFILE NO. 2

Designation	Headquarter	Experience Required	Minimum Qualification	CTC
Zonal Manager South, West, North & East	Hyderabad, Bengaluru(South), Pune & Delhi (North & East)	10 - 15 year (in poultry supplements and nutraceutical Sales)	B.V.Sc. or any equivalent degree	Perks and Salary are better than MNC's. Attractive Incentives and other benefits.

JOB PROFILE NO. 3

Designation	Headquarter	Experience Required	Minimum Qualification	CTC
Regional Sales Manager (South India) East & West	Bengaluru, Hyderabad, Coimbatore, Delhi, Chandigarh, Kolkata & Patina	7 - 10 year (in poultry supplements and nutraceutical Sales)	B.V.Sc. / M.V.Sc. (Nutrition) or any equivalent degree	Perks and Salary are better than MNC's. Attractive Incentives and other benefits.

JOB PROFILE NO. 4

Designation	Headquarter	Experience Required	Minimum Qualification	CTC
Executive Sales	U.P., Bihar, Rajasthan, M.P., Tamil Nadu, A.P., Karnataka, Maharashtra, Telangana, Kolkata, Patna	5 - 10 year (in poultry supplements and nutraceutical Sales)	B.V.Sc. / M.V.Sc. (Nutrition) or any equivalent degree	Perks and Salary are better than MNC's. Attractive Incentives and other benefits.

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Open Letter to Minister of Agriculture & Farmers Welfare, Govt of India

by Dr Chandan Prasad, Product Line Specialist, Cargill Animal Nutrition, India.

To

Shri Narendra Singh Tomar,
Hon'ble Minister of Agriculture & Farmers Welfare,
Govt of India.

Subject: "**Request for framing policy on producing quality DDGS**"

Respected Sir,

In last few years, Indian livestock sector has been witnessing a bumpy ride, with skyrocketed prices of raw material like maize and soya. This has put negative pressure on the margins of this industry, that contributes more than 4% of national GDP. Several geo-political issues take the centre stage, that bring these dramatic shifts. At one side, political conflict in eastern Europe created vacuum of feed ingredients globally, inflation was put on fifth gear by OPEC decision to cut down crude oil production on the other side. We would like to make it clear that objective behind this letter is not to propose for any kind of discount or subsidies. In fact, we perceive this difficult situation as an opportunity to introspect our practices and find out scope for improvement in our operational efficiencies and bring down losses. This introspection had showed us a way forward. Originated as a co-opportunity with one of the Govt's most ambitious project of alternate fuel, this has potential to ensure better sustainability in livestock farming and generating export income as well. We would like to bring your kind attention towards this opportunity only.

Energy needs of our nation share a proportional rhythm with economic growth. From 4.2 trillion INR in FY-2011, we have increased our crude oil imports to estimated 12 trillion INR in FY-2023.No need to state that India has turned towards alternate energy sources to reduce this energy bill. This is evident with our growth in field of solar energy, bioethanol and ongoing multiple projects of nuclear reactors. Among these, bioethanol is directly related to farmers and is proven as a game changer to fulfil Government's vision to improve their income. But bioethanol project is having much larger potential. Current ethanol production capacity of India is approximately 684 crore litre that will be increased to 1500 crore litres by 2025 (*Road mapfor Ethanol Blending in India 2020-25*, by Niti Ayog, June 2021). Of the current production, 37%, i.e., 258 cr. Litres are derived from grain-based distilleries and rest from molasses-based units. As per planning, grain-based production will be enhanced by 186% to 740 crore litres by 2025. Flip side of this will be a proportionate production burst of ethanol by-product i.e., Distiller's Grain. By default, distiller's grain is produced in wet form, which can be dried to produce DDGS (Dried Distillers Grain with Soluble). DDGS is a good source of energy and protein and a good feed ingredient for livestock. If we try to estimate DDGS production potential according to production data, current capacity is 2.06 million tons, that will be increased to 5.92 million tons by 2025. For making it easy to understand, we can translate these figures in term of animal feed. Current poultry feed production of India is approximately 26 million tons, which will grow to about 32 million tons by 2025. It means that DDGS alone can contribute 18 of poultry feed. Unlike many other livestock feed ingredients, DDGS can't be used for human consumption, therefore, we can expect its price to remain stable for long. These are reasons, why many Southeast Asian countries like Thailand and Philippines has given significant importance to DDGS in their livestock feed. Unfortunately, similar momentum is not yet seen among Indian feed manufacturers. And the question is "WHY"?

One can easily find answer to this question by looking at mycotoxin (fungal toxins) report published by various organizations. More than 90% of DDGS samples analysed were found to be carrying significant levels of various mycotoxins. Due to absence of any Govt. directives, either distiller's grain is sold in wet form and being dried under sun, without following any scientific methods. Such high level of toxins in DDGS creates hazards for both animals and the ultimate human consumers. Added to this, such practices stealits potential to become a major contributor in animal feed. And this is contrasting difference between DDGS available in India with that of SE Asian countries. Most of the SE Asian countries source DDGS from Napa Valley, USA. Ethanol producers in Napa Valley had already adopted scientific methods to channelise their by-products to be with quality only. And now it is a source of their secondary income. In fact, they have regarded DDGS as a Co-product of ethanol, rather than as by-product.

Several private sector organizations had already started working on to determine scope and efficient production methods after DDGS inclusion in feed. Such initiation will start resonating with policy back-up from Govt. As a responsible industry member, we would also like to suggest major points to be included in such policy:

1. Subsidizing drying equipment of distiller's grain
2. Or otherwise, tax rebate on ethanol for producing quality DDGS
3. Production guidelines to be circulated among ethanol producers
4. Test and analysis facility to promote trade and exports of DDGS

India is a home to world second largest population and so quality feeding to this large number is always a challenge. A major chunk of people with average annual income of less than $2000 cannot afford costly food. In such scenario, DDGS (if produced with quality) offers a great opportunity. Not only this can reduce our dependency on costly ingredients like Soya, but also add up to our national exports, like that of Napa Valley producers.

This is our kind request to you for designing and implementing national policy on DDGS to safeguard sustainable future of livestock nutrition and ensure food security, while adding up to climate conservation.

Looking forward to serve the nation and the society.

Thanks and Regards,

Dr Chandan Prasad,
Product Line Specialist,
Cargill Animal Nutrition, India.

(Note: *Views presented by author are his own*)

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Avitech Nutrition participates in16th PDFA International Dairy & Agri Expo 2023

Avitech Nutrition participated at the PDFA Exhibition held from 3rd – 5th February 2023 at the Cattle Fair Grounds in Jagraon in Ludhiana, Punjab. The exhibition enjoys prime position in the country for the dairy industry comprising farmers, milk producers, milk processing units, veterinarians, consultants, dairy feed millers, animal nutritional feed companies etc.

Avitech Nutrition show cased products from its new PhyGeno division such as Avitriol – a plant based bioactive Vitamin D3. The visitors expressed keen interest in other established products on displaysuch as Avilyte WS Dairy (electrolyte), Avilact (rumen alkalizer), Avsorb Forte (toxin binder), Nutriox (antioxidant) and Performins Dairy CMZ (organic mineral glycinates).

PhyGeno at IPPE, Atlanta, USA in January 2023

PhyGeno exhibited at the IPPE (International Production and Processing Expo) in Atlanta, Georgia, USA between 24th- 26th January 2023.The IPPE is a collaboration of three shows – International Feed Expo, International Meat Expo and International Poultry Expo which represents the entire chain of protein production and processing. It is the largest trade show for the industry in the Americas.

The PhyGeno booth received a lot of interest for its phytogenic (plant based feed additive) range of products from visitors from North America, South America, Africa and Europe.

Avitech Nutrition participates at the 9th Kolkata International Poultry Fair 2023

Avitech Nutrition participated at the 9th KIPF Exhibition held between 9th – 11th February 2023 at the Science City in Kolkata. The exhibition is largest of its kind in the eastern part of India, catering to a sizeable section of the Indian, Bangladeshi and Nepalese poultry industries.

Avitech showcased the products of its new division - PhyGeno which offers plant-based solutions such as Avitriol (plant based bioactive Vitamin D3), Sapodo (plant-based ammonia binder, PhyCholine (plantbased Choline), GenoLiv (plant based Hepato stimulant) and Green C (plantbased Vitamin C). The exhibition evoked a strong response in terms of participation and footfall as it was being held after a gap of 3 years duration.

Egg buying rate for meal scheme set right: Tamil Nadu Govt

Chennai: The state social welfare department, which came under criticism for procuring eggs at a higher rate for the noon-meal scheme, said the issue was set right in subsequent tenders.

P. Geetha Jeevan, social welfare minister, said that in the tender floated last September, firms supplying eggs at 4.76 each were chosen for the next one year. This includes the cost of transporting the eggs to anganwadi centres and schools.

Under the Integrated Child Development Scheme (ICDS), the state procures around 50 lakh eggs daily. When the average wholesale market rate of an egg was 4.50, the social welfare department bought them for 5.52 to 5.82 per egg from private firms in 2021-22, show official documents sourced through Right to Information (RTI) Act, 2009. Back of the envelope calculations show the government was spending at least 50 lakh in excess daily.

Among the suppliers, Suvarnabhoomi Enterprises Private Limited supplies eggs to all four regions in TN. Its managing director Thirumangalam Sengodan Kumarasamy is behind Christy group of firms, under the Income Tax department's radar in connection with the 1,500-crore scam in public distribution system, said Jayaram Venkatesan, convenor of anti-corruption NGO Arappor Iyakkam.

Three years ago, when M K Stalin was the opposition leader, he flagged similar discrepancies in egg procurement under ICDS. After becoming CM in 2021, Stalin said private firms which supplied poor quality food material for Pongal gift hampers will be blacklisted.

But Natural Foods, penalised for the said violation, was also allotted orders to supply eggs for 2021-22, indicating that the DMK-led government is repeating the mistake of its predecessor, said Yuvaraj Ramalingam, an RTI activist, who brought this issue to light last year.

To questions on firms linked to Christy Foods being chosen for the previous tenders, Geetha Jeevan said they were not blacklisted and hence were qualified to participate in the bidding. All egg suppliers and bidders were present while choosing the firms which quoted the least. So, there was no violation in tender norms, she said.

Not forcing kids to shun eggs in Karnataka: BC Nagesh

Bengaluru: Members of the opposition, both Congress and JD(S), cornered the BJP government in the legislative council on February 13 over discrepancies in distribution of eggs to schoolchildren as part of the midday meal scheme.

They pointed out that some schools are insisting that children choose either bananas or chikkis rather than eggs. However, minister BC Nagesh insisted that there is neither "such thought or proposal" before the government to scrap eggs, and that children are free to choose.

While revealing distribution of eggs was affected over the past four months due fluctuations in prices, KA Thippeswamy of JD(S) said: "Going by data, Belagavi district has consumed the highest number of eggs, while districts in Kalyana Karnataka are lagging.

Ideally, it should have been the other way around. Some schools are deliberately refusing to serve eggs and insisting that children choose only bananas or chikkis."

Joining the debate, opposition leader BK Hariprasad (Congress), said, "As per a survey, of the nearly 48 lakh students,

B. C. Nagesh, Member of the Karnataka Legislative Assembly

about 38.4% have said they wish to consume eggs.

Only 7.3 lakh kids preferred bananas, and another 2.3 lakh wanted chikkis. Although a majority, children are being deprived of eggs." Thippeswamy also referred to a recent meeting of the education department with various religious heads and a discussion on Sattvik food and sought clarity on the government's stand. Surprised by the outburst, Nagesh said:

"It is surprising that the opposition is asking for our stand now — almost a year since we began distributing eggs.

We took a bold decision to distribute eggs, although a decision was made way back in 2007. Where there is malnourishment, we are distributing eggs. Kids are free to choose between eggs, bananas and chikkis."

Too many eggs in one basket

Namakkal: A group of poultry farmers in the Namakkal region picketed the local office of the National Egg Co-ordination Committee (NECC) seeking a better price for their produce. The NECC could do little to help them. Like any other agricultural produce, the traders fix the price and farmers are forced to accept it as they cannot hold stock beyond a point.

"Fifty years ago, we used to carry eggs in baskets filled with hay to the nearest towns to sell them for a better price. Eggs from Namakkal are now sold all over the country and even exported, but the farmers continue to struggle to get the right price," says P K Venkatachalam, one of the first to have a poultry farm in the Namakkal region and who went on to play a leading role in growing the industry.

A move by a veterinarian to help a handful of his friends to rear poultry for eggs in their backyards around 1970-71 sowed the seeds for the industry. By the early 1990s, around 10,000 farmers were rearing poultry for eggs. A whole lot of others – feed manufacturers, traders and transporters – depended on this industry as it grew. But the farmers hardly grew.

Those days, just two traders – one based out of Mumbai and the other based in Chennai -- determined the price of eggs for the country. Venkatachalam once took a van full of eggs to Chennai, after fixing its price as 19 paise per egg with this trader. Once the eggs reached Chennai, no one cared to come near the van to even inspect it. After several hours, this trader came to the scene and said there are no takers for the eggs and offered to buy them at 15 paise each. "I finally arrived at a compromise and sold it at 17 paise per egg. Within a week, I assembled all the poultry farmers and formed the Namakkal Egg Coordination Committee to determine the price of eggs. The traders were forced to buy it at that rate," recalls Venkatachalam. The Namakkal Egg Coordination Committee later became the National Egg Coordination Committee after farmers from Hyderabad, Chittoor and Pune joined in.

Now, the NECC has ceased to be effective. No trader respects the rate it fixes. Last week, the NECC had fixed the farm gate price of an egg at `4.65, the traders were buying at `4. "The farmers are also to blame. There is a lack of cooperation and too many associations. Their collective muscle weakened long ago," says Vangli Subramanyam, a long-time trader and once a poultry farmer himself. "The cost of production itself comes to `4.5-`4.6 per egg and farmers are selling it at a loss," he adds.

Poultry rearing is no longer a backyard activity. From 10,000 farmers with 600-1,000 birds per farm in the 1990s, the number of farmers has come down to around 1,100, and a farm has grown to 50,000 to five lakh birds. Namakkal region now has a capacity to rear six crore birds and produce 4.5 crore-5 crore eggs a day.

"Tapping the export market will help sustain price. But the farmers need government support for that," says P V Senthil, managing director, Kaveris Bio Proteins Private Limited, general secretary, Livestock Agri Farmers Trade Association and member, NECC.

Export of eggs from Namakkal started in the 1990s to the Gulf region. By 2003, one crore eggs from the region were reaching 17 countries in the Middle East pushing out European and American eggs from the market. But competitors used a disease outbreak in Manipur to mount a campaign against Indian eggs. The numbers came down to a mere five lakh eggs, impacting the farmers who had expanded capacities. Though the region opened up from 2013 through Kuwait, Oman and later Qatar (demand spiked during the recent FIFA World Cup), the numbers are still around 20 lakh.

"In December, Malaysia went through egg shortage and chose eggs from Namakkal. We airlifted around 50 lakh eggs that month alone. But exports to Malaysia have stopped since then due to licence issues that the Union government has to fulfil," says Senthil, who believes one crore eggs a week can be sent to Malaysia.

Coutesy: NECC

Why Environmental Surveillance for Avian Influenza is Vital ?

The world's largest northern gannet colony at the Bass Rock, an island off the coast of North Berwick, Scotland has been recently decimated by avian influenza (H5N1) or bird flu which caused unprecedented loss of tens of thousands of birds in the U.K.

Avian Influenza:

- Avian influenza, or bird flu, is a highly contagious viral infection that primarily affects birds.
- Infrequently, the virus can infect mammals from birds, a phenomenon called spillover, and rarely can spread between mammals.
- There are several different subtypes of avian influenza viruses, ranging from low pathogenic to highly pathogenic types that can cause severe illness and death in birds.
- H5N1 is a highly pathogenic subtype of avian influenza that causes severe disease and death in birds.
- This subtype has caused several human infections through close contact with infected birds, or contaminated environments and is often fatal.
- Recent reports of H5N1 transmission between mammals, therefore, raise concerns about its potential to cause a human pandemic.

Intra-Mammal Transmission of H5n1:

- Recently, the intra-mammal transmission of H5N1 in captivity in mink farms was recorded, posing a bigger concern concerning zoonotic potential.
- More recently in February 2023, Peru reported cases of H5N1 avian influenza in sea lions and a dolphin, and a lion dying from H5N1 in a zoo.
- This raises concerns about the potential for H5N1 to cause a pandemic in humans if it were to spill over and become transmissible among humans.
- It is also possible that over time, **the virus could evolve through mutations or recombinations** with other influenza viruses to adapt to new hosts, leading to further outbreaks.

Past Outbreaks:

- The H5N1 avian influenza virus was first detected in 1996 on a goose farm in China.
- Subsequently, a major outbreak was reported in 1997 among poultry in Hong Kong, also leading to human infections of H5N1, which left 6 people dead and 18 infected.
- In 2004, H5N1 was reported in several countries in Asia, and further, a global outbreak continues to date.
- In 2013 and 2014, many countries in Europe and Asia reported H5N1 in poultry.
- Over the years the virus has caused outbreaks across the world, predominantly spread by migratory birds.
- To date, over 800 cases of human H5N1 infections have also been reported, with a high fatality of 53%.

Avian Flu Outbreak in India:

- In India, the latest major avian flu outbreak in 2020-2021 swept through many states causing mass mortality of wild birds which brought concerns on the lack of active surveillance to the forefront, and how wetland and waterfowl habitats at the interface of poultry need to be monitored.

Challenges for India:

- India is a major **wintering ground for many waterfowl** that rely on the central Asian Flyway.
- While the avian flu outbreaks coincide with the peak migratory season leading to post-outbreak surveillance and culling, there are also reports of outbreaks in the off-season suggesting endemic transmission within the poultry sector.
- India is the fastest-growing egg producer in the world, but unlike in Europe, poultry birds here are not vaccinated against the flu.
- Furthermore, farms with a diversity of animals or in the vicinity of nearby wetlands increase the potential for the viruses to undergo reassortment that can potentially generate more virulent strains H5N1 or H7N9 — which could then infect humans.
- Despite this potential, there is no active surveillance in the poultry sector.
- There may be no efficient human-to-human transmission mechanism yet, however, the risk cannot be ruled out as the virus continues to evolve.

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- We need an active and passive year-round surveillance network under One Health which connects monitoring of human and animals in a shared environment.

Wastewater-Based Epidemiology or Pathogen Surveillance:

- Wastewater-based epidemiology or pathogen surveillance has become an integral component of environmental surveillance providing near **real-time information on health and community exposure to pathogens.**
- While environmental surveillance is not a new concept and has been used widely for monitoring several pathogens, it offers an excellent tool.
- Recurrent infections of animal hosts with the virus have posed a persistent threat.
- A **virus surveillance network in place across multiple sites** is crucial for improving our understanding of the diversity, and seasonal and geographical distributions of the virus in environments associated with poultry and wild birds.
- The surveillance needs to target the locations where spillover is most likely.
- Domestic ducks are recognized as an important reservoir for H5N1.
- Environmental surveillance is an important area that can enhance the information on the prevalence diversity of avian influenza viruses in free-ranging domestic flocks or under confinement conditions where feces or other effluent are deposited into the environment.

Way Ahead:

- Preventing H5N1 spillovers and outbreaks requires a combination of measures including
  - Vaccination of poultry
  - Safe disposal of dead birds
  - Quarantine and culling of affected animals
  - Wearing personal protective equipment when handling birds
  - Improved surveillance and monitoring of H5N1 in birds and other animals
- **Human vaccines against H5N1 avian influenza** have been designed to protect against the most severe forms of the disease.
- However, the highly mutable nature of the H5N1 virus could potentially decrease vaccine efficacy over time.
- Therefore, molecular surveillance of avian influenza and its subtypes is essential in understanding and responding to outbreaks.
- **Genome sequencing** can be employed to monitor mutations in the virus, and the emergence of new subtypes, and keep a close watch on mutations and virulence factors that may increase the ability to infect humans.
- This can inform public health decisions and guide the deployment of more effective control measures.

Conclusion:

- Although the risk of H5N1 infecting and spreading among humans has been evaluated as low, **disease and genomic surveillance as an integrated approach** to controlling avian influenza are needed to keep a close watch on the outbreak.
- As we learned from the COVID-19 outbreak, **monitoring the evolution of the shapeshifting virus** can add to the preparedness against another potential pandemic.
- Currently, virus surveillance is reactive and relies on sampling dead birds.
- Environmental surveillance would be a great non-invasive tool that can be done without disturbing the birds and can be used to obtain both host and viral genetic material.
- Most importantly, **environmental surveillance should be complemented with effective carcass collection and testing, and better biosecurity on poultry farms** to improve preparedness and response in the future.

Source: The Hindu

A Synopsis of the Book "Connecting Fables with the Corporate World"

Dr A E Kumar present the Book to Ponnala Lakshmaiah

Dr A E Kumar completed PDGM from IIMA in 1992 . In this book he has co-related his vast corporate experience with the fables / stories he has come across. He has exposure across the industries like banking, poultry, pet animal food and hire purchase . The author has penned 54 stories he has come across in five divisions, viz., Self, Peers, Boss, Work Environment and Entrepreneurship, and related those stories with incidents that have happened in his corporate journey. The author has also asked the readers to write their morals and their relatable happenings. It gives an attachment to the readers with this book from the beginning to the end.

For Example: In chapter 5, Merchant sleeping under a Banyan Tree, he narrates the story most of us know. To correlate this, he has given an incident where the management provided him with a Jeep instead of a Car. Like the Merchant, the author was disappointed that such a vast organisation had given a Jeep instead of a Car. After a month, when the Jeep in which he was traveling met with an accident, he had a fracture and his driver had severe injuries. When the insurance surveyor saw the damaged vehicle, he commented that the author, driver and co-passenger were alive because of the Jeep. Had it been a car, all three would have reached heaven. With this, the author mentioned a moral that whatever decision the management takes should not be judged too much. We have to accept that things are happening for good and move ahead.

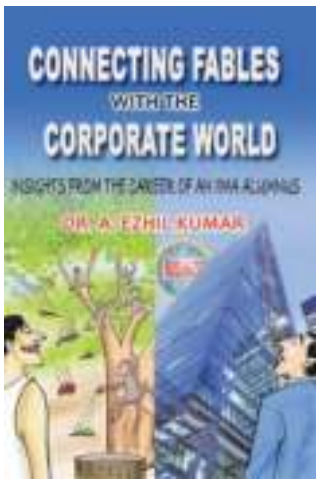
In the story, Lady at the river bank the Author narrated that like the first monk, he believed that the unions are always wrong. Because earlier in his career a union leader spoiled his request of getting a long leave from the management to study PGDM at IIM Ahmedabad. Later he became a second monk and forgot the issue and started listening to the genuine demands of the union.

The author has given many such incidents in his career, which will keep the reader hooked.

The simple way he has narrated the stories and related the incidents are so relevant that persons working across the industries can connect their experience with the book and either learn something new or recollect the experience they have gone through

Finally, he has appealed to employees, to continue with the employer and grow with him, and to the employer, to value the employee's integrity over performance.

This book is worth reading by existing executives and MBA students to understand the dynamics and how to live in the corporate world.



Front cover page

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Author Biography (113 Words)

Dr A. E. Kumar is a seasoned corporate professional with over 30 years of experience across various industries, including banking, poultry, pet animal food and hire purchase. Around 75% of his career, he worked / spent in poultry sector. He holds a Bachelor's degree in veterinary science, a Masters in Agricultural Economics and a PGDM from IIM Ahmedabad, providing a unique and well-rounded perspective. He has held numerous leadership positions and has a wealth of knowledge and expertise to share. Dr Kumar is a seasoned globetrotter, having worked in Western Africa, including Nigeria, Benin, Ghana and Cote d'Ivoire, and traveled extensively in Malaysia and Brazil for business growth and expansion. He was honored to receive training for Indian Managers, offered and conducted by the German Government.

Amravati's Award-Winning Poultry Farmer to lecture IAS trainees at Mussoorie

Nagpur: Poultry farmer Ravindra Metkar from Amravati will be guiding 189 IAS trainees of 2022 batch, giving them a low down on agrarian crisis as well as success stories, at the Lal Bahadur Shastri National Academy of Administration, Mussoorie on March 7.

About four decades ago, Metkar had started his farm with just 100 layer birds on the terrace of his modest home in Anjangaon in Amravati. He now owns a 50-acre farm having nearly two lakh layer birds producing 1.20 lakh eggs daily.

Metkar also cultivates a range of fruits and seasonal crops like citrus, chikoo, coconut, maize, wheat on 42-acres land in the farm. He would be speaking during 'Kisan Samvad: Learning from progressive farmers' under the agriculture module at the academy.

Metkar has received top awards from ICAR for his best practices in 2022, 2021 and 2020. He is also brand ambassador of Panjabrao Deshmukh Krishi Vidyapeeth Akola. Metkar said he is the first farmer from Maharashtra to be invited to the academy in the last 20 years.

"I would be narrating how I progressed from 100 to 2 lakh birds and 50 acres. I would also be telling them what the farmers expect from government officers and how can they support us," he said.

The award-winning farmer was just 16-year-old when he started pursuing his passion for poultry farming. "I never backed out despite several ups and down in this journey.

With timely investments and right moves, I had established my farm by 2005. I suffered losses too due to bird flu in 2006 but could manage the crisis from the cushion of previous savings. Now, we have employed 50 people to look after our farm," he said.

Metkar has now mechanized his poultry farm, making collection of hundreds of eggs completely automatic, removal of waste and using it as manure in his fields. "We get good crop by naturally fertilizing the soil. It cuts down our expenses on chemical fertilizers and pesticides.

Today, our daily income from poultry eggs alone is Rs4lakh. Crops are yielding Rs1lakh per acre annually. Out of 50 acre, 8 acres are used for poultry sheds," he said. His younger son Shivraj has joined Metkar in his farm after completing BSc in Agriculture Management from Baramati.

"After 2003, I am the first farmer from Maharashtra to receive the ICAR's national award. Paddy farmer Chandrashekhar Bhat Sawale from Raigad was the other farmer from the state to receive ICAR's award," he said.

In 2022, Metkar received ICAR's Jagjeevan Ram Abhinav Kisan Puraskar carrying Rs1 lakh cash award for doing inspirational work in agricultural and allied sciences. Later, Indian Agricultural Research Institute (IARI) bestowed fellow award conferring professorship to Metkar in 2021. This was followed by innovative farmer Award in 2020 by IARI.

Not just the officer trainees, Metkar has been guiding retired government officials, entrepreneurs and fellow farmers on agricultural practices. His YouTube videos have now crossed millions of views.

Bird flu: What are the risks to people and animals ?

Countries ranging from the United States and Britain to France and Japan have suffered record losses of poultry in outbreaks of avian flu in the past year. The disease, which experts said is being spread by migratory birds, reached South American nations such as Ecuador, Peru and Bolivia for the first time.

SHOULD HUMANS WORRY ABOUT INFECTIONS ?

The risk to humans is low, said Tedros Adhanom Ghebreyesus, director-general of the World Health Organization. As a precaution, people are advised not to touch dead or sick wild animals.

Globally, 868 human infections with H5N1 avian flu - the type of virus

circulating around the globe - were reported from 21 countries from January 2003 to Nov. 25, 2022, according to the WHO. Of these cases, 457 were fatal, about 53%.

In January, the WHO reported the first known human case of the avian flu H5 virus in Latin America and the Caribbean - an infection in a nine-year-old girl in rural Ecuador. The girl, who was in contact with backyard poultry, was hospitalized, the agency said on January 18.

Human cases are usually the result of direct or indirect exposure to infected live or dead poultry or contaminated environments, the WHO said.

WHICH COUNTRIES HAVE BIRD FLU ?

At least 60 countries have killed poultry in response to bird flu outbreaks since October 2021, according to data the Paris-based World Organisation for Animal Health provided to Reuters. Among the countries affected are India, Taiwan, Nepal, Peru, the Czech Republic, Romania, and Niger, the intergovernmental group has said.

WHAT BIRDS CAN BE INFECTED ?

Wild birds including waterfowl like ducks can carry bird flu viruses without appearing sick and easily spread them to domesticated poultry like chickens and turkeys, experts said.

CAN OTHER SPECIES BE INFECTED ?

Mammals including bears, seals, foxes and skunks have been infected with H5N1 avian flu, authorities said.

WHAT HAPPENS TO POULTRY THAT BECOME INFECTED ?

Highly pathogenic avian flu, such as the type that is circulating globally, can cause disease that affects multiple internal organs, with mortality up to 90% to 100% in chickens, often within 48 hours, according to the U.S. Centers for Disease Control and Prevention.

If one bird in a flock has avian flu, farmers usually cull all their birds to prevent the spread of the highly contagious virus.

HOW DOES THIS AFFECT FOOD SAFETY ?

As part of government response plans, infected birds are excluded from the food supply. Additionally, avian flu is not transmissible by eating properly cooked poultry and eggs, the U.S. Department of Agriculture said.

HOW DID THE OUTBREAK GET SO BAD ?

The ongoing global outbreak of H5N1 avian flu traces back to the first detection of the goose guangdong lineage of the H5 virus in Hong Kong in 1996, disease experts said.

Dabbling ducks in Asia adapted over time so they could carry the virus without dying, said John Clifford, a former chief veterinarian for the U.S. Department of Agriculture. The virus then made its way into breeding grounds and through migratory pathways around the world, said Clifford, now the veterinary trade policy advisor for the USA Poultry and Egg Export Council, an industry group.

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USSEC organizes 2-day workshop on Shrimp and Fish Nutrition at Hyderabad

Hyderabad, India: As part of its commitment to the global aquaculture industry through consistent leadership, collaboration and support, U. S Soybean Export Council (USSEC) South Asia and Sub Sahara Africa region (SASSA) organized a two days workshop on Nutrition as a part of the project **Aqua Tech Talks**. The event focused on highlighting and informing key industry leaders about **the differentiating advantages of using U. S Soybean Meal as a key protein source ingredient in fish and shrimp feed**. USSEC put together a line-up of prolific global experts who educated the audiences about different aspects of fish and shrimp farming along the entire production chain, while emphasizing on the use of good quality feed, latest innovations and technologies like precision feeding to ensure optimum end product output. The speakers also demonstrated the unique attributes of U.S Soybean meal which includes high nutritious value, high protein density, high digestibility and high amino acid profile to yield rapid fish growth.

Doug Winter, Chairman, USSEC at Aqua Tech Talks Nutrition Workshop 21 & 22 February 2023 organized by USSEC

Mr Doug Winter, Chairman, USSEC inaugurated the session with a talk on Sustainable production practices of US Soy. Mr Regional Director for SAASA discussed the global trends in soybean meal production and supply. Mr Deeba Giannoulis, Head of Marketing & Sustainability, USSEC, SASSA discussed the U.S. Soy sustainability and its relevance to Aquaculture. Mr Chandrasekar Sankaranarayanan, Head Aquaculture Utilization South Asia gave an overview on Asian Aqua Feed industry with special reference to South Asia. Mr Jaison John, Team lead, India, USSEC welcomed.

Other eminent speakers from the international Aqua Nutrition field invited by USSEC presented talks during the workshop and provided the recent technological updates from formulation to processing. Nutritive value of feed ingredients, selection of raw material and the factors for selecting ingredients were discussed in detail by the speakers. Day one focused on topics related to shrimp nutrition and outlined the advantages of using soybean meal with higher inclusion rates in cost effective shrimp feed formulation. Comparison of soybean meal from different sources were also highlighted. Dr Dominique Burau presented a talk on the value of mathematical modelling in formulating sustainable aqua feeds and shared his experiences on precision nutrition. Sessions were followed by panel discussions which were highly interactive as well.

*Panel Discussion - **moderated by Chandrasekar Sankarnarayanan, Head, Aqua Utilization, South Asia, USSEC***

Aqua Tech Talks Nutrition Workshop, 21 & 22 February 2023 at Hyderabad, India

1st Day – 21 February 2023: Workshop: Shrimp Nutrition

Speaker	Session
Chandrasekar Sankaranarayanan, Head Aquaculture Utilization – South Asia, USSEC.	Welcoming remarks and introduction.
Doug Winter, Chairman, USSEC Board.	**Sustainable Production Practices for US Soy.** Listen to an influential grower leader from (the state of Illinois) give a crop production update and illustrate sustainable production practices to lrverage in aquaculture production and marketing.
Kevin Roepke, Regional Director – SAASSA, USSEC.	**Global Trends in Soybean Meal Production and Supply.** Learn about current trends in soybean meal production and supply worldwide and anticipated requirements for the future.
Deeba Giannoulis, Head of US Soy Marketing – SAASSA, USSEC.	**U.S. Soy Sustainability and its relevance to Aquaculture.** Learn about U.S. Soy's Sustainability and the U.S. Soy Sustainability Assurance Protocol – SSAP (pre-recorded).
Chandrasekar Sankaranarayanan, Head Aquaculture Utilization – South Asia, USSEC.	**Overview on Asian Aqua Feed Industry.** Overview on aqua feed industry in Asia with special reference to South Asia.
Dominique Bureau, Professor, Fish Nutrition Research Laboratory University of Guelph.	**Nutritive value of Feed Ingredients: Overview and Limitations.** Learning the composition of common ingredients used in aqua feed formulation and the identification of factors influencing their selection and use.
Matthew Clark, Director, Feed Guys Reseources Pte Ltd, Malaysia.	**Status Comparison of Soybean Meal from different sources and their effective use in Aqua Feed Formulation.** Comparison of soybean meal from different sources and its increased use in aqua feed formulation.
K. Ambasankar, Principal Scientist, Central Institute of Brakish water Aquaculture (CIBA), Chennai, India.	**Emerging Trends in the use of plant based protein & Lipids in Formulating Shrimp Feeds.** Understanding the current scenario in India with increasing cost and limited availability of animal protein and the growing needs of sustainable plant protein.
Panelists in Panel Discussion	Doug Winter, Kevin Roepke, Chandrasekar Sankaranarayanan, Dominique Bureau, Matthew Clark, K. Ambasankar and moderated by Jaison John.
Victor Suresh, Director, United Research (Singapore) Pte Ltd.	**Organizational aspects of Feed Formulation.** An orientation on the landscape of how nutrition and formulation work together, how purchasing and formulation interact and more.
Pierre Fortin, Aquaculture Manager – Techna, France.	**Enhancement of Plant Protein utilization in Shrimp Feed Formulations.** Enhancing the plant protein utilization through biotechnological tools for cost effective feed formulations and for sustainability.
Dominique Bureau, Professor, Fish Nutrition Research Laboratory University of Guelph.	**The value of Mathematical Modelling and Software in the Development, Formulation and Evaluation of Sustainable Aqua Feeds.** Overview of how modeling can be used to develop nutritional specifications and support the formulation of cost-effective and sustainable feeds and assist in the evaluation of those feeds.

Rajaram Vanjiappan, Head of Nutrition & Operations, Grobest Feeds, India.	**Role of Nutrition in Shrimp Health Management.** Sharing of experiences on functional performance of feed in shrimp farming and its importance in disease management.
Chuchai Kanjanamayoon, Aquaculture Technical Manager, USSEC, Thailand.	**Success Stories from Thailand on Increased use of Soybean Meal in Shrimp Feed Formulation.** Tabling the results on the trials with different levels if soybean meal in shrimp feed formulation obtained from field trials in Thailand.
Alberto J.P. Nunes, Professor, Aqua Nutrition, Federal University of Cearaand, Brazil.	**Cost-Effective High-Performance Shrimp Feeds with higher levels of Soybean by products with Krill as a Feed Attractant and Palatability Enhancer.** Discuss the ways and means to increase the usage of soybean meal in shrimp feed formulation while maintaining its attractability and palatability.
Panelists in Panel Discussion	Victor Suresh, Pierre Fortin, Dominique Bureau, Rajaram Vanjiappan, Chuchai Kanjanamayoon and Alberto J.P. Nunes. Moderated and Final Remarks by Chandrasekar Sankaranarayanan.

2nd Day – 22 February 2023: Workshop: Fish Nutrition

Speaker	**Session**
Dominique Bureau, Professor, Fish Nutrition Research Laboratory, University of Guelph.	**Precision Feeding of Aquaculture Species Reared Under Intensive Conditions.** Review of how feeding management of aquaculture species and how production efficiency and profitability can be improved through proper feeding management.
Rajaram Vanjiappan, Head of Nutrition & Operations, Grobest Feeds, India.	**Sustainable Aquafeeds.** Discuss the sustainability of raw material, processing, feed delivery and farming.
Latha Sundaram, Assistant Vice President CPF, India.	**Quality Assessment of Aqua Feed Ingredients.** Importance on the assessment of raw material used in aquafeeds for obtaining better output.
Swamy Haladi, Global Technical Commercial Manager, Trouw Nutrition.	**Management of Mycotoxin in Aqua Feeds.** Need for the assessment of mycotoxin in raw material and the ways to maintain strict quality control of ingredients used in aqua feed formulation.
John Williamson, Huvepharma UK.	**Enhancement of Plant Raw Material Protein Utilization in Fish Feed Formulations.** Importance of the assessment of raw materials used in aquafeeds for obtaining better output.
Dr P. Haribabu, Technical Director, Deepak Nexgen Feeds, Andhra Pradesh.	**Indian Fish Feed Industry – Way Forward.** Need for using formulated fish feeds for successful farming.
Saravanan Subramanian, Global TCM, Trouw Nutrition, Norway.	**Mineral Nutrition.** Role played by different minerals in aquafeed formulation and the minimum requirement of each mineral for better formulation.
Panelists in the Panel Sicussion	Dominique Bureau, Rajaram Vanjiappan, Latha Sundaram, John Williamson, Swamy Haladi, Dr P. Haribabu, Saravanan Subramanian and moderated by Khabibur Rahman.
Kiranpreet Kaur, Director R&D, Fish Health & Nutrition, Akerbiomarine Antarctic AS, Oslo, Norway.	**Functional Ingredients for Fish Nutrition with Special Focus on IMC and Pangasius.** Discussing the needs for using nutrition as a tool for handling diseases and health management of Indian major carps and pangasius widely farmed in India and Bangladesh.
Ramesh Gangatharan, Technical Sales Manager – Asia, ME and Africa Wenger, USA.	**Preconditioning: A Vital Component of Extrusion Processing of Aqua Feeds.** Highlighting the importance of preconditioning process and improved practices.

Matthew Clark, Director, Feed Guys Resources Pte. Ltd, Malaysia.	**Nutrient Value Calculator for Aqua Feeds.** Understanding the importance of nutrient value calculations for effective formulation of aqua feeds.
Biju Sam Kamalam, Scientist, ICAR – Directorate of Coldwater Fisheries, Nainital.	**Innovations in Fish Feed Formulation.** Glimpses of the recent developments in commercial fish feed formulations.
Kumaraguru Vasagam, Principal Scientist, Central Institute of Brackishwater Aquaculture (CIBA), Chennai.	**Emerging Nutritional Concepts and Research Gaps Targeting Next Generation Aqua Feeds.** Analysis of the industry requirements and matching those with research and matching those with research and leveraging that research to support commercial aquaculture.
Panelists in the Panel Discussion	Kiranpreet Kaur, Ramesh Gangatharan, Matthew Clark, Biju Sam Kamalam, Kumaraguru Vasagam. Moderated by Chandrasekar Sankaranarayanan and Final Remarks by Doug Winter, Chairman, USSEC Board.

From left: ***Dr P. Haribabu, Ramesh Gangatharan, A.V.Subramaniam, MD, Deepak Nexgen Feed; Chandrasekar. S, Dr M.V.D. Malleshwara Rao and Jaison John.***

Speech by Mr Kevin

A view of participants along with USSEC Chairman Doug Winter and the Speakers in the two days during Aqua Tech Talks, Nutrition Workshop held in Hyderabad, India on February 21 & 22, 2023.

There is a higher demand for high-quality, sustainably-produced food and feed ingredients, driven by consumer consciousness about health and the environment

Doug Winter, *Chairman, USSEC*

The U.S. produced about 120 million MT of soybeans last year and exported about 60% of that total in the form of soybeans, meal or oil. India was the largest single market for U.S. Soybean oil in MY 21/22. India produced around 14 million MT of soybeans and will export some meal in the months right after harvest and possibly import meal back later in the year. We have been watching the exports of meal decline significantly over the last 10 years as the local demand for soybean meal has been growing. We expect this to continue and look forward to being a growing and reliable supplier of soybean meal to support India's vision on nutrition and economic growth via its food and feed industry. Poultry Fortune Editor, M.A. Nazeer had an exclusive interview with Doug Winter, Chairman, USSEC. Excerpts:

About Doug Winter, Chairman, USSEC Board

I was born in Carmi, Illinois, U.S.A on December 25, 1954. I attended elementary and high school in that same town. I received my B.S degree from Southern Illinois University at Carbondale with a major in Agricultural Economics and a minor in Plant & Soil Science in 1977. After graduation, I returned to my family farm and began farming in partnership with my father Norman in 1977. We farmed together until his retirement in 1989. I farmed the operation by myself until 1993 when my brother Richard and myself combined our farming operations to form a 2800 acre operation. We continued our partnership until his retirement in 2014. During that period, we increased the size of our farm to 3100 acres. I have operated Doug Winter farms since then and my current famr size is 3520 acres. The farm size has increased its acre age by a combination of farmland purchases and rental of additional farms from retiring farmers. My wife, Nancy is a certified public accountant operating her own accounting firm, Nancy J. Winter, CPA in Carmi, Illinois. Our daughter Charisse works as the head of digital advertising department of a large healthcare corporation. Our son Neil works managing a food & beverage service operating three retail outlets. I have a nephew and a great nephew who work with me on the farm along with one full-time and one part-time employees.

1. Background Note on USSEC and when was USSEC established

U.S. Soy's vision is to transform nutrition, advance climate-forward solutions, and support progress for people and communities. As farmers, we have a deep commitment and responsibility to nourish the world sustainability.

Soybeans continue to be the United States' number one food and agricultural export. U.S. Soy's combined exports (whole soybeans, meal, and oil) achieved a record value of $ 40.42 billion for the marketing year (MY) 2021/22, up 17% year-on-year, and export volumes reached 71.79 million metric tons (MMT), the second-highest on record (Source: USDA Economic Research Service and Foreign Agricultural Service).

The U.S Soy farmers and industry currently export over 60% of annual soy production. The U.S. Soybean Export Council (USSEC) is the international marketing arm for U.S. Soy. USSEC was formed in 2004 as a joint partnership of the American Soybean Association and the United Soybean Board (the U.S. Soybean Check off Board).

USSEC focuses on differentiating, building preference, and enabling market access for the use of U.S. Soy for human consumption, aquaculture, and livestock feed in 80+ countries internationally. USSEC members represent the soy supply chain including U.S. Soy farmers, processors, commodity shippers, merchandisers, allied agribusinesses, and agricultural organizations. USSEC is funded by the U.S. soybean check off, USDA Foreign Agricultural Service (FAS) matching funds, and industry.

2. Who are the promoters ?

USSEC has 105+ members who represent the entire soy

supply chain including U.S. Soy farmers, processors, commodity shippers, merchandisers, and food and agriculture agricultural organizations. USSEC is funded by the U.S. soybean checkoff, USDA Foreign Agricultural Service (FAS) matching funds, and industry.

3. Head Quarters of USSEC

USSEC world headquarters is in St. Louis, U.S.A. and our international team reaches 80+ countries around the world.

4. What are the objectives of USSEC ? Are you satisfied with the performance/ progress/ results of USSEC in USA and internationally ?

U.S. Soy's vision is to transform nutrition, advance climate-forward solutions, and support progress for people and communities.

Our USSEC objectives are centered around three main pillars of our strategic plan:

1. To differentiate the quality and value of U.S Soy from other nutrition and energy products

2. To elevate preference for U.S Soy in existing and developing global markets

3. To attain market access for U.S Soy through cooperation with a variety of global stakeholders

We strive to do this by delivering world-class performance, acting responsibly, fostering our diversity and trusting in our team. One of our guiding principles is listening to our customers and advocating their needs to the industry.

I have been greatly impressed with the performance and progress of our USSEC global team.

USSEC Chairman Doug Winter and Poultry Fortune Editor, M.A. Nazeer at Hyderabad on February 21.

Domestically in the U.S., we maintain excellent relationships with the U.S farmers and industry.

Internationally, I am amazed at the level of respect USSEC has attained from companies across the food industry, in the animal protein, aquaculture, oil and soy foods sectors.

Our goal is to be a trusted partner to our customers and be an essential enabling solution provider to advance their sustainability and profitability goals.

USSEC's strategic work in emerging economies has helped countries increase and maintain their share of world trade growth, while continuing to position U.S. Soy as a trusted, sustainable source of nutrition and energy in mature and expanding markets worldwide.

5. In how many countries does USSEC have its operations ?

USSEC reaches over 80 countries around the world.

6. Future plans and targets ?

USSEC will continue to collaborate across the global food and agriculture value chain with diverse stakeholders to enable nutrition and food security in the 80+ countries we serve.

As we developed our strategic plan for 2022-25, we factored in three key trends:

- First, there is a higher demand for high-quality, sustainably-produced food and feed ingredients, driven by consumer consciousness about health and the environment. Research from First Insight and the University of Pennsylvania found 75% of Gen Z consumers say sustainability is more important than brand names when making purchases. Gen Z's influence on Gen X caused preference for sustainable brands to increase 24% and display a willingness to pay more for them to increase 42% since 2019.
- Second, the cost of a healthy diet is significantly higher than an energy-sufficient diet, showing significant gaps in our food system's ability to deliver nutritious foods at affordable prices.
- And lastly, as part of healthy, sustainable diets, demand for soyfoods is increasing. USSEC-commissioned research revealed that the sector has grown 3% annually since 2010.

Therefore, we can say that sustainable and efficient value chains and diversification of the food system are critical for healthy diets.

Global poultry, pork, and aquaculture consumption are forecast to grow 17.8%, 13.1%, and 23% respectively by 2030. Global soy foods per capita consumption grew 24% to 2.67 kg in 2020 from 2.16 kg in 2010. As consumers, food companies and countries increase their focus on value, sustainability and transparency, U.S. Soy is strongly positioned to meet global needs as a key source of sustainable protein. USSEC is well poised to deliver solutions that create long-term value for all our stakeholders - consumers, customers, countries, U.S. Soy farmers and industry.

We will do this by continuing efforts to bring USSEC resources to markets around the world teaching people about the importance of protein consumption through programs such as Right to Protein; take USSEC programs to more countries and areas within countries that can benefit from the knowledge which can be transferred; and continue to ensure that the sustainability of U.S. Soy is known by importers all around the world who are interested in using low carbon footprint soy ingredients to help the world solve its climate change issues. We have long believed that we will do well when the Customers of U.S. Soy do well – we will continue following that philosophy.

We expect a challenging global environment continuing in MY 22/23 including economic contraction and inflation. Yet we are confident that when companies and countries choose sustainable solutions, collaborate, and advance open trade, together we can create positive impact.

7. What is the size / volume of soybean production in USA and its exports to different parts of the world and to India?

The U.S. produced about 120 million MT of soybeans last year and exported about 60% of that total in the form of soybeans, meal or oil. India was the largest single market for U.S. Soybean oil in MY 21/22. India produced around 14 million MT of soybeans and will export some meal in the months right after harvest and possibly import meal back later in the year. We have been watching the exports of meal decline significantly over the last 10 years as the local demand for soybean meal has been growing. We expect this to continue and look forward to being a growing and reliable supplier of soybean meal to support India's vision on nutrition and economic growth via its food and feed industry.

8. How can USSEC be beneficial to shrimp, fish and other species producers in aquaculture as well as poultry producers and stakeholders?

Aquaculture is the fastest-growing segment of the food and feed industry, according to the United Nations' Food and Agriculture Organization, which estimates that aquaculture production is expected to grow to 109 million metric tons by 2030 — an increase of 32% over 2018. This presents a huge opportunity for U.S. Soy as more aquaculture producers learn about the advantages to using quality soybean meal in their feed formulations. According to the OECD-FAO Agricultural Outlook 2022-2031 report, by 2031 aquaculture is expected to provide 59% of the fish for human consumption.

Over the years USSEC has continued to provide training to fish, poultry, dairy and soy food producers in India.

To affirm USSEC's commitment to shape a growing and sustainable aquaculture industry, USSEC is working in the following ways:

1. **Global Aquaculture Advisory Council** - At USSEC, we believe in multi-stakeholder collaboration and co-creating value. First up, we convene a Global Aquaculture Advisory Council with multistakeholder representation from 11 academia, civil society, industry, public sector, and sustainability certification organizations globally. It helps create a holistic approach of aquaculture that advances sustainable growth across the entire value chain, from farmers to feed companies to seafood companies to consumers. And in our view, the multistakeholder representation also reaffirms the U.S. Soy farmers and industry's commitment to shaping a growing and sustainable aquaculture industry.
2. Second, USSEC spearheaded development of the **In-Pond Raceway System (IPRS)** aquaculture technology in partnership with Auburn Univ. which sustainably optimizes use of natural resources such as water, land, energy, thus protecting the environment, and helping reduce the carbon footprint of aquaculture.
3. USSEC also actively contributed our global expertise to develop the **International Aquaculture Feed Formulation Database (IAFFD)** which enables aquafeed companies to customize and optimize fish feed to best match the specific nutrient requirements by species and life stages for a wide range of fish and crustacean species.
4. We work with the world's leading aquaculture and aquafeed companies sharing technical expertise, industry trends, and collaborating on commercial, sustainability, regulatory, and/or reputational opportunities.
5. We c**ollaborate** with **Global Seafood Alliance BAP**, support **Global Aquaculture Innovation Challenges** alongside companies like IBM and others, and on other industry opportunities.
6. We plan to continue to do this going forward as well.

9. Who are the key individuals/ Country Team Leads of USSEC globally and in India?

The USSEC website at USSEC.org provides a good listing of all USSEC Team Members. The CEO of USSEC is Mr Jim Sutter who is planning to be in India in May of 2023.

India Team:

- Kevin Roepke, Regional Director - South Asia & Sub-Saharan Africa
- Deeba Giannoulis, Head - U.S. Soy Marketing, South Asia & Sub-Saharan Africa
- Jaison John - India Team Lead
- Chandrasekhar Sankarnarayanan – Head, Aquaculture Utilization, South Asia

10. How is the progress of your new concept 'Nutrition Workshop' under the title 'Aqua Tech Talks' and the symposiums and meetings of Right To Protein?

Soy is highly nutritious and provides all the three macronutrients required for good nutrition, as well as fiber, vitamins, and minerals with minimum saturated fat.

Right To Protein is a nationwide consumer awareness initiative, supported by U.S. soy farmers and the Soybean Export Council (USSEC), that aims to educate consumers on the importance of adequate protein consumption, diverse sources of protein, and catalyze a movement towards better nutrition, health and well-being.

We believe that the 2 programs mentioned are doing very well. Working with Aquaculture producers to help them understand nutrition opportunities and the utilization of the Intensive Aquaculture Feed Formulation Database (IAFFD) and communicating the Right to Protein initiative which is a public health initiative to increase awareness about the importance of adequate and quality protein in everyday diet. The campaign aims to nurture a growing ecosystem that can tackle the problems of food and nutrition insecurity.

We are pleased with the progress and looking forward to partnering to help transform nutrition, advance climate-forward solutions, and support progress for people and communities.

3 Things to do in Summer to overcome Production Loss and Mortality

Email: sathyas@vetogen.com

Dr Sathya Sooryan
MVSc (Animal Nutrition), PGDOH
Senior Product Manager, Vetogen Animal Health

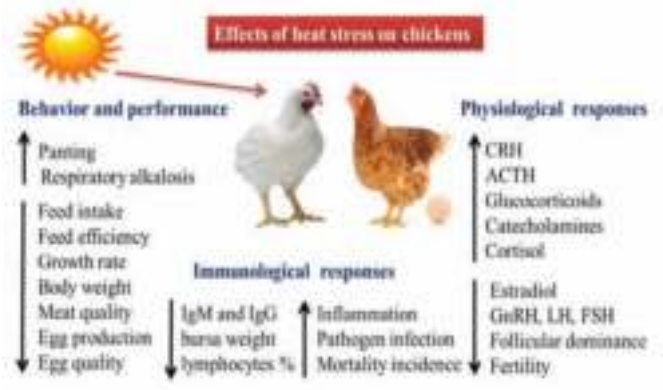
Dr Sanjay, *MVSc (Animal Nutrition)*
Technical Executive, Vetogen Animal Health

As the sun rises high and the days stretch long, the cornerstone of modern agriculture, the poultry industry face a season of despair. Summer, with its sweltering heat and endless sunshine, presents a myriad of challenges to the commercial poultry farms, which provides a significant source of protein to populations around the globe. As temperatures rise, the heat has a serious impact on the health and productivity of the bird leading to profound impact on profitability of commercial poultry farms. To address these challenges, farmers must be diligent in their understanding of the three consequences of heat stress which impacts the health and productivity of birds. They also should be aware of management practices and steps to mitigate the impact of heat stress on their flocks. This article focuses on 3 core areas and addresses varieties of challenges faced by commercial poultry due to heat stress.

When is your bird Heat Stressed ?

If birds have difficulty in achieving a balance between body heat production and body heat loss they enter into heat stress, undergo physiological changes and exhibit behavioural response (Image No. 1). This can occur at all ages and in all types of poultry.

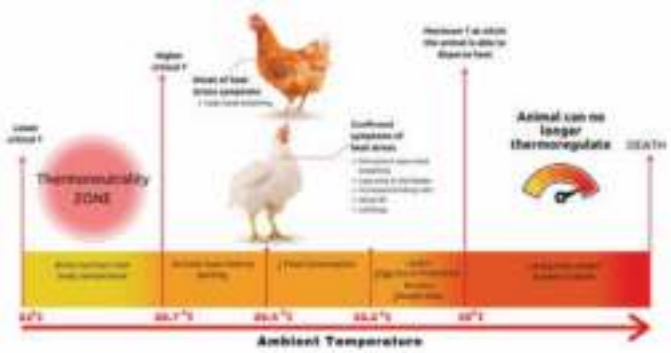
Image No. 1:



How birds respond to different ambient temperature

The temperature ranges within which poultry birds maintain their body temperature is understood as Thermo neutral zone. This range lies between 21 to 26.7 °C. When upper critical temperature i.e., 26.7 °C is exceeded, birds must lose heat actively by panting. Beyond 29.4 °C, birds reduce their feed consumption and as temperature cross 32.2 °C, the egg size and production decreases in layers.Beyond 35 °C, hens start losing weight. If heat production still increases beyond maximum heat losses by the bird's body, either in intensity (acute heat stress) or over long periods (chronic heat stress) birds will die. At 32 °C and Relative humidity 50% are the benchmarks for beginning of Heat stress (Image No. 2).

Image No. 2: How birds respond to different ambient temperature



Heat Stress = Panting, No ! its loss of electrolytes

Panting in heat-stressed bird is a common visible symptom which allows bird to dissipate body heat, but along with heat, water and crucial electrolytes are lost in the process which alters the acid-base balance in blood plasma and ultimately leads to respiratory alkalosis. During respiratory alkalosis, birds excrete a higher amount of bicarbonate ions from the kidney to restore normal blood pH. These bicarbonate ions are further coupled with Na+ and K+ ions before being excreted through the kidney. Ultimately, the loss of ions results in an acid-base imbalance Tong et al. (2020).

A change in acid-base balance in the blood plasma of birds can have a significant impact on poultry health and production. If the pH level of the blood becomes too acidic or too alkaline, it causes metabolic disorders and reduce the birds' ability to absorb nutrients from their feed. This can lead to decreased growth rates, reduced egg production,

and increased susceptibility to diseases. Furthermore, changes in acid-base balance can affect the activity of enzymes and metabolic pathways in the birds, leading to further health complications. To maintain optimal poultry health and production, it is important to monitor and regulate the acid-base balance in the birds' blood plasma through proper nutrition and management practices.

This acid-base imbalance can be recovered by supplementation of electrolytes such as NH_4Cl, $NaHCO_3$, and KCl. Sodium and potassium supplementation is preferred in heat-stressed birds to increase the blood pH and blood HCO_3^-, while chloride is supplemented to reduce these parameters. A higher range of dietary electrolyte balance (DEB), i.e., 200–300 mEq/kg, has been suggested to be effective in ameliorating the detrimental effects of heat stress in poultry Yahav, S. (2018).

Heat doesn't kill the bird it just suppresses immunity

Increasing temperature creates many changes in bird's body which leads to suppressed immunity which increase the chances of disease and mortality in flock. High Temperature cause oxidative stress in birds, leading to the production of reactive oxygen species (ROS) and oxidative damage to cells. This compromises the birds' immune system by decreasing the production and function of immune cells, including T cells, B cells, and macrophages. Additionally, heat stress affects the production of antibodies, cytokines, and other immune molecules, further suppressing the birds' immune response Yahav, S. (2018).

Another way in which heat stress affects immunity in poultry birds is by increasing their susceptibility to bacterial and viral infections. For example, heat-stressed birds are more likely to contract infectious bronchitis virus (IBV), a highly contagious disease that affects the respiratory system. In addition, high temperatures can increase the replication rate of some bacteria, such as Escherichia coli and Salmonella, leading to more severe infections in the birds Sharma, N. K., & Singh, N. K. (2016).

To mitigate the negative effects of heat stress on the immune system of commercial poultry birds, it is important to provide appropriate management strategies. One such strategy is to provide adequate ventilation and cooling in poultry houses. This can be achieved through the use of fans, misters, and evaporative cooling systems. Additionally, it is important to provide clean and cool drinking water, as water intake is essential for maintaining the birds' immune system. Furthermore, providing proper nutrition to birds during heat stress is essential. For example, supplementation of antioxidants such as vitamins E, C and Selenium can help reduce the production of ROS and minimize oxidative damage to cells. Moreover, feeding birds with probiotics, prebiotics, and immune-enhancing compounds such as proven herbs can help improve their immune function during heat stress Alabi O. J.(2018); Kargaret al., (2021).

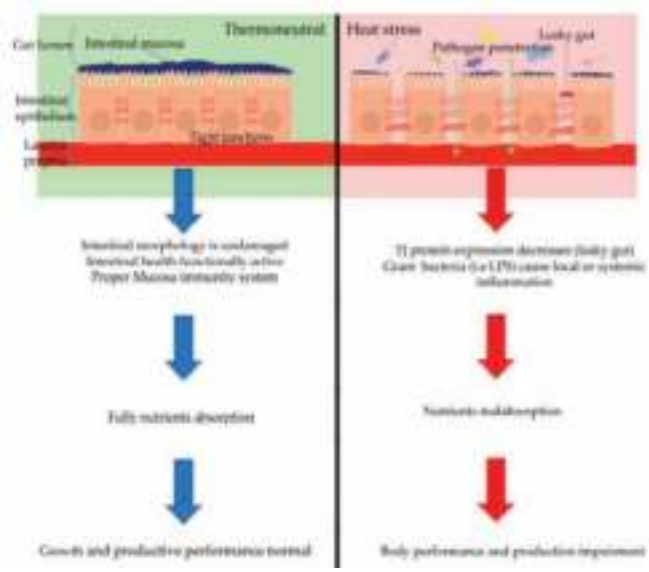
Heat doesn't reduce productivity it just suppresses gut health and alter gut morphology.

Heat stress affects the gut health of poultry birds in several ways, including the disruption of gut microbiota, intestinal morphology, nutrient absorption, and gut immune function. One of the major ways in which heat stress affects gut health in poultry birds is by altering the gut microbiota composition. The high temperatures create a favourable environment for the growth of harmful bacteria, leading to an increase in the pathogenic load of the gut. This can result in a disruption of the balance between beneficial and harmful bacteria, leading to dysbiosis.Wang, Y., et al. (2020) Heat stress decreased populations of beneficial bacteria (Lactobacillus and Bifidobacterium) in the intestine which was replaced by harmful bacteria like Coliforms and Clostridium Liu, H., Iqbal, Z., & Xiao, S. (2021).

Additionally, heat stress can lead to changes in the intestinal morphology, including decreased tight junction protein expression (leaky gut) (Image No. 3), decrease in immunoglobulin A-secreting cells, villus height and an increase in crypt depth, which can further exacerbate dysbiosis and entry of bacteria to system. These changes lead to a decrease in digestibility of the feed and low availability of nutrients for absorption from the intestinal mucosa to the blood. Physiological changes resulting from heat stress allow the pathogenic bacteria to enter the bloodstream by crossing the intestinal lumen to cause septicaemia. In this manner, heat stress leads to lower performance, less egg production, low meat yield, retarded immunity status, and low reproductive performance Hashemi, S. R. (2019).

The feed intake is reduced and water intake is enhanced, which has a negative impact on the absorption of nutrients being produced by the microbiota in the intestinal lumen. Additionally, the secretion and motility of the intestine increases and nutrient absorption decreases. Production of digestive enzymes in the intestinal lumen is decreased by the heat stress, which adversely affects the intestinal mucosa leading to oxidative stress and inflammation.

Image No. 3: Effect of heat stress on intestinal health and immune system



Heat stress also affects the nutrient absorption capacity of the gut, leading to reduced feed efficiency and growth performance. High temperatures can reduce the expression of nutrient transporters in the gut, leading to a decreased uptake of nutrients such as amino acids, glucose, and electrolytes. This can lead to a decrease in feed efficiency and growth performance, which can result in significant economic losses for farmers R. I. N. Gresseet al (2017); R. J. Collieret al (2017).

To mitigate the negative effects of heat stress on gut health in commercial poultry birds, appropriate management strategies must be implemented as described above. Additionally, farmers should provide clean, cool drinking water and high-quality feed that contains probiotics, prebiotics, and immune-enhancing compounds such as herbs and essential oils to support gut health. The use of feed additives such as organic acids, enzymes, and phytogenic compounds can also help improve nutrient absorption and gut health in heat-stressed birdsT. J. Applegateet al (2014); N. A. Mayahiet al (2017).

Conclusion

Heat stress is a major challenge for the commercial poultry industry, particularly during the hot summer months. The negative impact of heat stress on the health and productivity of birds can be significant, leading to three major changes effecting productivity and profitability of commercial poultry farm that is loss of electrolyte, decreased immunity, suppressed gut health. However, by implementing appropriate mitigation strategies focusing these three core areas, farmers can significantly reduce the impact of heat stress on their flocks. By providing adequate ventilation, ensuring access to clean water, and managing water, feed and nutrition, farmers can maintain the health, performance and profitability of the farm.

Need of Enzymes in Poultry Production

Dr Sharad Durge
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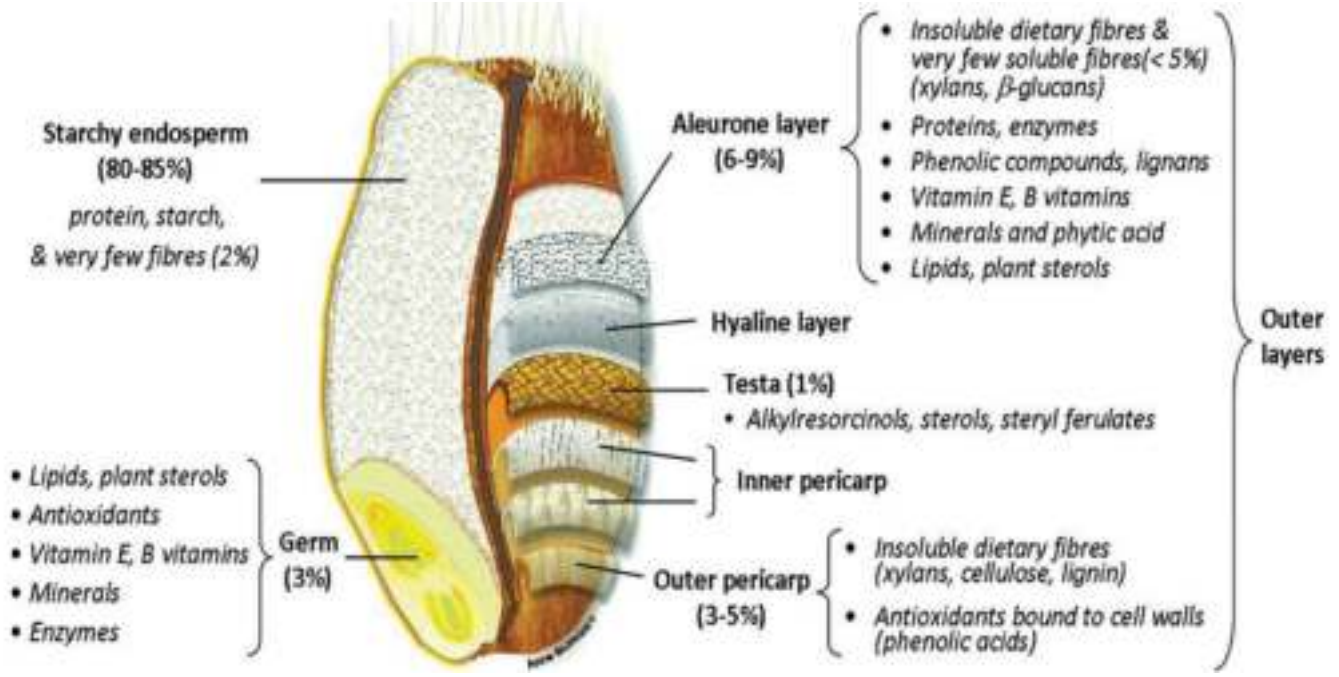
A chicken has a very simple digestive system. The chicken digestive system comprises the beak, mouth, oesophagus, crop, proventriculus, gizzard, small intestine, colon and cloaca. The digestive system, the salivary gland, the liver, and the pancreas help digest the food, and the residual wastes are eliminated from the body. The digestive system is responsible for ingesting food, its breakdown into its constituent molecules and absorption into the bloodstream, and waste elimination. Since the chicken has a simple digestive system, the diet must be high quality and easily digestible to attain optimum and productive performance.

During digestion, the enzyme amylase, produced by the salivary and oesophageal glands, breaks down the starch carbohydrates. However, the amount of enzyme action at this stage is minimal. The first major enzyme activity occurs in the proventriculus and the gizzard. The secretions of the proventriculus (glandular stomach) include hydrochloric acid to lower the pH of the system and the food mixture, the enzyme pepsin that acts on protein, and the hormone gastrin that stimulates the production and release of gastric juice in the proventriculus and pancreatic juice from the pancreas. The gizzard is a very powerful organ which physically breaks the food particles into smaller sizes to make the work of the enzymes easier. At the same time, the enzymes previously released into the food with the saliva and by the proventriculus are thoroughly mixed into the food, improving their ability to carry out their work. The enzymes amylase and pepsin act on starch and simple protein to break them down into simpler proteins. However, there is a limitation on the production of these enzymes in the body.

When food enters the duodenum, pancreatic juice and bile from the liver enter via ducts located at the distal end of the duodenum at about the junction of the duodenum and the jejunum. However, because of the backflow of pancreatic juice and bile towards the gizzard, the actions of these secretions start earlier in the digestive process than would be expected by their entry point to the small intestine. Another effect of this secretion is an increase in



the intestinal contents' pH in the duodenum's latter half, from strong to weak acid. As a result, most of the starch and varied amounts of protein and lipase are digested during this digestion process. In contrast, many other components like non-starch polysaccharides (NSP), complex proteins, lipids and phytic phosphorus are excreted undigested due to a lack of enzymes for their digestion.

The chicken's dietary energy and protein components are derived from various crop seeds. Plants produce seeds for the reproduction and propagation of their species. During seed production, due care is taken to protect the germ from external pests and changing climate.

Fig. 1. Composition of seed. PC: Surget and Barron (2005)

The germ (3%) and endosperm (80%) are protected by many insoluble fibrous layers aleurone layer (6-9%), Hyaline layer, testa (1%), inner pericarp and outer pericarp (3-5%). Most fibrous layers contain NSPs (6-33%) like xylans, beta-glucans, mannans, pectins, cellulose, phytic acid, vitamins, minerals, lipids, and phenolic acids.

Raw materials for poultry feed are purchased on a weight basis. When seeds are processed to make poultry feed, NSPs and other complex materials remain. NSPs and other nutritional complexes do not get digested during digestion and often act as an anti-nutritional factor in the system. NSPs soak water in the intestine and increase the viscosity of digesta. This viscous material forms a jelly-like material and encapsulates other nutrients like Protein, Mineral, and Vitamins, making them unavailable for enzymatic digestion and absorption. Unabsorbed material is excreted out and pollutes the environment. This way, the dry matter gets wasted, and ultimately, money is wasted.

Species-specific enzymes are insufficient to utilise feed raw materials' potential fully. As a result, raw material components like NSPs and phytic acid go unutilised, and potential digestible proteins and lipids are underutilised due to lower levels of enzymes and individual variability in enzyme production.

Supplementing exogenous enzymes improves nutrient digestibility (Lei et al., 2017). Exogenous enzymes like Cellulase, Xylanase, Mannanase, Beta-Glucanase, Pectinase, and Phytase helped utilise unutilised NSPs and phytic acid. At the same time, supplementation of amylase and multi-protease helped realise maximum utilisation of starch and protein. There are many commercial enzymes available in the market with different combinations. Some contain Amylase, Cellulase, Glucanase, Mannanase, Pectinase, Xylanase, Phytase, Protease, Lipase, and probiotics like Bacillus Coagulance. Combining many enzymes is a better option for exploring the potential of raw materials, even at lower quality. Moreover, adding probiotics and systemic enzymes helps better nutrient absorption and performance.

The utilisation of exogenous enzymes contributes to the nutrient composition and availability in the final feed. Therefore, feed costs can be optimised using the nutrient availability matrix value. Exogenous enzymes are a boon to the feed industry in the current scenario of rising raw material prices. Using exogenous enzymes in feed helps achieve better FCR, uniformity in the flock, improved health, better use of cheap feed ingredients, and reduced feed cost.

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Poultry Sector Growth in India and Modern Poultry Farming Innovations

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Introduction

In India, raising poultry has become an essential aspect of raising cattle. According to BAHS, its economic contribution in 2017–18 resulted in a gross value addition of 76294 crores. According to the 20th census, the total number of poultry in the nation is 851.81 million, of which 317.07 million are considered to be backward poultry. The population of chickens has grown by 16.8%, indicating that livestock farmers are becoming more interested in raising chickens on an annual basis. The majority of poultry farms are located in rural areas, which is helpful for the development of rural areas, yet 37% of all rural chickens are raised using a backyard poultry farming approach. This is a barrier to increased poultry farming earnings since, in comparison to commercial poultry farming, backyard poultry farming does not fully utilize available resources. Chicken farmers have a tonne of opportunities because roughly 95% of the poultry industry is wet, which means that consumers consume the meat unprocessed and in raw form. The export of poultry meat, which has not been fully exploited until now, can expand significantly with processing and diversification. With time, poultry farming has greatly advanced thanks to the persistent efforts of farmers and experts. Through efficient resource management, poultry producers can boost their earnings by utilizing a number of cutting-edge technologies. Breeding, nutrition, health, and housing are the fundamental elements of a successful chicken farming operation that are crucial. The following components, which make up the new revolutionary technologies, are classified into them.

Poultry Breeding

Scientific breeding for desired qualities is one of the most efficient ways to improve the performance of chicken flocks. Today, hybrid vigour or crossbreeding is used to create poultry lines with outstanding performance. Different commercial birds are developed by crossing between trait-specific purebred lines to produce broilers and layers. These crossing lines come from the great-grandparents of public use commercial birds. By commercial poultry breeding and selling companies, purebred lines, great grandparents, grandparents, and parents are typically maintained. The following are some recent advancements in poultry breeding technology.

Highlight Points

The majority of poultry farms are located in rural areas, which is helpful for the development of rural areas, yet 37% of all rural chickens are raised using a backyard poultry farming approach. This is a barrier to increased poultry farming earnings since, in comparison to commercial poultry farming, backyard poultry farming does not fully utilize available resources. Chicken farmers have a tonne of opportunities because roughly 95% of the poultry industry is wet, which means that consumers consume the meat unprocessed and in raw form. The export of poultry meat, which has not been fully exploited until now, can expand significantly with processing and diversification. With time, poultry farming has greatly advanced thanks to the persistent efforts of farmers and experts. Through efficient resource management, poultry producers can boost their earnings by utilizing a number of cutting-edge technologies.

QTLs are used to choose the sire and dam for the following generation. Every characteristic is a reflection of a few proteins that were created using the genetic code found in the form of genes in DNA. Quantitative trait loci, or QTLs, are groups of genes in avian DNA that are strongly associated with a particular attribute of interest, such as body weight gain in the case of broilers. Therefore, this approach is employed for continuous variable qualities that are the outcome of numerous DNA genes.

Microarray study, which is the analysis of microscopic slides with organized series of animal sample, is used to identify the genes for our trait of interest. The qualities that are currently profitable can be found on DNA using this approach.

Many procedures, including transgenesis, shutting down a gene with RNAi and proteomics, nanotechnology, epigenetics, in-ovo approaches, and even CRISPR gene editing technologies, are now employed to add new features or characteristics to poultry strains or reduce the malfunctioning of a gene. The introduction of new traits that are not present naturally is aided by these procedures.

The performance decline in birds caused by extreme weather conditions can be partially or entirely reversed with the aid of novel gene editing technologies. For instance, the introduction of a single gene that reduces or modifies feathering allows the naked neck strain of chicken to successfully handle heat or temperature.

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1989
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2010
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2010
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Nutrition of Poultry

As over 70% of all expenses in chicken production go toward feed, it has a significant impact on the industry. 95% of the overall cost of the feed is spent on the purchase of the energy and protein-containing feed ingredients. Minerals, vitamins, and feed additives get the remaining funds. Therefore, a key aspect in poultry production is feed. The most popular feed item for poultry diets is maize, while soybean meal is the most popular feed ingredient for adding protein. For the most part, compounded feed is used for poultry. The following new developments in the usage of feed components in chicken production have recently occurred.

New transgenic feed is created with the help of transgensis that contains more essential proteins and amino acids for chicken. These transgenic feed also contain fewer tannins and glycosinolates than conventional feed, which includes canola meals with low erucic acid. Due to their limited appetite, poultry birds can only consume a certain amount of feed, making it difficult to provide the proper balance of nutrients. These transgenic feeds are a technique to now supplement the diet of poultry with additional vital elements. Synbiotics with probiotics and prebiotics are currently being used as new antibiotic alternatives, particularly for drugs that affect on gut bacteria. Synbiotics aid in enhancing the healthful microbial activity and survival in the gut.

The limited supply of amino acids produced in feed ingredients is prepared using new biotechnological methods. Through the metabolic process of microbes like yeast, these are created. These microorganisms can manufacture these limited amino acids because their genomes have been modified to include particular genes. These microbes may create even tract minerals like zinc, manganese, chromium, selenium, copper, etc.

Health of Poultry

The second largest expense in running a chicken farm, behind feed, is health care. Diseases like bird flu, fowl pox, and others can quickly spread throughout a whole flock and cause the death of all the birds on a farm. Therefore, the well-being of the birds is crucial for successful farming. A new batch of birds is often introduced into the facility after every bird in a flock has been sold, which is known as the "all-in and all-out" technique in poultry production. New birds are properly quarantined before being added to breeding stock or any other stock. For the benefit of the health of birds, biosecurity precautions should also be taken. Here are a few modern methods for fighting infections in chicken farming.

Birds are now treated for a variety of ailments right away, and the causes of those diseases are thoroughly investigated so that in the future effective preventative measures can be applied. Post-mortem examination of deceased birds and epidemiological research on diseases are crucial for this. Another very crucial factor is whether the infectious pathogen causing the sickness is the same or a newly developed strain. A treatment plan or preventative strategy should then be implemented at the chicken farm.

The disease-controlling strategy of chicken farms includes infrastructure for disease diagnosis, training of farm staff, and information sharing on newly emerging diseases. Diseases like the bird flu and others can be fought by creating disease-free zones surrounding poultry farms using a variety of tight biosecurity procedures.

A disease prevention campaign against area-specific infections, together with a vaccination programme, can be prepared with the aid of a geographic information system (GIS), a computer system for capturing, storing, verifying, and displaying data connected to positions on the earth's surface.

Housing for Poultry

Housing for poultry includes avian facilities and farming-related machinery. The equipment used by poultry is impacted by advances in mechanics. Since commercial poultry farms account for 62% of all poultry farms worldwide, where poultry equipment plays a significant role, home poultry farming is likewise shifting toward commercial farming. Here are a few recent advancements in poultry housing.

Modern farms are adopting new automated control systems with automated showers and the usage of cooling pads that are simple to clean and disinfect. New moving chain feeders are employed for effective feed distribution, quickly completing the circuit. Modern farms frequently use flicker-free fluid LED lighting systems with adjustable light levels. Special digital air quality monitors are used in poultry farms to track the levels of ammonia and carbon dioxide in the facility where the birds are housed. These monitors provide real-time readings of these gases. By doing so, the toxicity of these gases is reduced, which helps to preserve the performance of birds.

The new water system is meant to stop dirt, faeces, and other contaminants from getting into the automatic drinking system, keeping water clean. This aids in preventing both water waste and water-borne illnesses in flocks. Manure collection in layer farming uses a specific moving belt system. After that, palletization of dried manure further stabilises the substance, lowering agricultural dust. This aids in keeping the poultry farm's conditions clean.

Farmers are able to observe their broiler sheds interior from their cellphones, tablets, and personal computers with the use of remote access livestock monitoring systems used in poultry farms. This might be advantageous for farm management in the current COVID-19 environment.

Conclusion

India's economy is heavily dependent on the poultry industry. The improvement of rural livelihoods through poultry farming is crucial for rural development. The need for animal protein in the form of meat and eggs is rising as the world's population rises day by day. Given that India is the world's third- and fifth-largest producers of eggs and poultry, this may present a significant potential for farmers of poultry. But this won't be possible unless and until Indian farmers adopt new technologies related to contemporary chicken rearing. These contemporary advancements in poultry farming can help Indian poultry producers succeed and prosper.

Indian Poultry Industry Faces Certain Problems (Missing Information)

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Everyone will agree with me, as they see hundreds of articles published in various technical and popular journals worldwide, on poultry diseases caused by virus, bacteria, fungi and the mycotoxins they produce, and the damage they do to the poultry industry. Parasitic diseases like the coccidiosis, tape worm and round worm infestations etc., are often discussed and referred to as management related problems.

GI tract Parasites: A large number of birds of all types are affected with sub clinical and clinical Coccidiosis (due to various genus's of Eimeria organisms) an intestinal disease caused by intracellular protozoal parasites. There are seven pathogenic species of Eimeria affecting chickens, five affecting turkeys and one affecting duck. In the market several anti-coccidials are available for both, to be added to the feed as well as to be used through drinking water for treatment. Ascaridia (Round Worms) and Cestode's (Tape Worms) have drastically reduced after introduction of cage brooding and growing and the use of dewormers.

Surprisingly the Poultry Veterinarians, Consultants, Advisors and Experts have always ignored the blood sucking insects (Ecto-Parasites) and the diseases they spread. They are a nuisance for the birds, as they bite, are blood suckers and they spread a variety of diseases due to intracellular blood protozoan parasites, leading to anaemia, weakness, loss of production / performance and sometimes death.

Ecto-Parasites and Blood Parasites (The Missing Information): It is well known to the Veterinarians and the farmers, that their livestock and pet animals get several diseases from the biting and blood sucking ecto-parasites like the ticks, lice, mites, common bed bugs, fleas, flies and mosquitoes, these ecto-parasites are always in and around the livestock, pet animals and poultry farms.

Blood Parasites are organisms that live in the blood of their animal/bird hosts. These parasites can range from single-celled protozoa to more complex bacteria and rickettsiae. Their method of transmission varies, depending on the parasite and its life cycle, but often they are transmitted through the bites of arthropods/insects.

Globally ticks transmit a greater variety of pathogenic microorganisms, protozoa, rickettsiae, spirochaets, and viruses than any other arthropods and are among the most important vectors of diseases affecting livestock, humans, companion animals and sometimes birds.

Modern commercial poultry farming has significantly reduced parasitic infestations due to Improved hygiene and sanitation, use of cages and preventive programs but this problem is still high in free-range type and rural poultry, which is being promoted aggressively both by the Govt. and the Private Industry. The combined consequences of parasitic infestation and other infections, often seen together, are the decreased reproductive ability, coloring of plumage, impaired immune response, and increased expenses due to medications leading to monetary losses.

The blood parasites of Poultry. Avian haemosporidians (Haemoproteus, Leucocytozoon and Plasmodium) are common vector-borne globally distributed blood parasites, which occur in most species of birds. They are transmitted by blood-sucking dipteran insects which occur worldwide, irrespective of climatic barriers. Haemoproteus, Leucocytozoon and Plasmodium spp. also have been reported to affect the domestic poultry in our neighbouring Bangladesh.

Amongst them, Leucocytozoon is considered to be host-specific at the family level and is found in birds worldwide. The prevalence of Leucocytozoon is 16% in domestic poultry, reported from Iran and Pakistan. The blood parasites found in chickens were Leucocytozoon sp., with a prevalence rate of 8.9% occurring in both male and female chickens examined. Plasmodium sp. was also found and reported in the village poultry and turkeys and it gave a prevalence of 40%.

Most frequent transmission of parasites may occur through different vectors, including louse flies, black flies, biting midges and mosquitoes that may lead to anaemia, subclinical infections, enlargement of spleen, liver, gizzard, kidneys and ultimately death of the infected bird.

Haemoparasites cause anaemia by invading the host's erythrocytes which are consequently destroyed by the bird's auto-immune system, leading to death. Leucocytozoon typically causes anemia and enlargement of liver and spleen accompanied by metabolic disturbances. Mortality in bird due the disease may be up to 90 %.

Regular blood testing and microscopic examination of blood slides should be conducted to rule out the possibility of their presence, **which is never done.**

These organisms can be identified by microscopic examination of wet mounts, buffy coat, or blood smears or by appropriate culturing and molecular techniques. Microscopically, some are within blood cells (Plasmodium, Haemoproteus, Leucocytozoon, Isospora ,Hepatozoon, Babesia, Aegyptianella), whereas others are free in the

plasma (Trypanosoma, microfilariae, bacteria, spirochetes). None live exclusively in the blood; most are found in tissues but are present in blood during some part of their life cycle. Some, such as microfilariae and Plasmodium, have numbers or stages of parasites that vary with time. Haemoparasite infections are the most prevalent among the various parasitic diseases.

Avian haemosporidians are a large group of protozoa, and approximately 200 species have been described. Plasmodium is transmitted by mosquitoes (Culicidae), Haemoproteus is transmitted by biting midges (Ceratopogonidae), and Leucocytozoon is transmitted by black flies (Simuliidae). Examples of parasitic diseases that can be blood borne include African trypanosomiasis, babesiosis, Chagas disease, leishmaniasis, malaria, and toxoplasmosis. In nature, many blood borne parasites are spread by insects (vectors), so they are also referred to as vector-borne diseases.

Serologic and molecular diagnostic methods have been developed for avian hemoparasites. Molecular methods are very sensitive and can detect infection when parasite numbers are too low to be detected in blood or tissue smears or by histology. Hemoparasites can also be studied by subinoculation of infectious blood in birds of the same or a known susceptible avian species.

The Pharma Companies, the Research Institutes, the Universities / Veterinary Colleges or the private laboratories in India have always ignored the Ecto-Parasites and Blood Parasites, hardly any information is available in India, no reports , no literature etc. are available.

Why this important aspect has been neglected till this day, is not understood.

Is it not worth working on as these are not reported in India.

Is it not profitable for the Pharma Companies, so no R & D work taken up.

Are these Ecto-Parasites and the Blood Parasites, not present in India or is there any other reason for neglecting them, are few questions that need to be answered and looked into, before it becomes a major issue and too late to handle, with the increase in the village or rural and free range poultry farming.

CHICKEN AMINO ACID – Tonic to Boost the Agricultural Income

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FERMENTED LIQUID OF CHICKEN WASTE MEAL (called here as Chicken Amino Acid) is a very good plant fertilizer. It can be used as foliar spray or soil application. As per my suggestions, one farmer at Bantwal taluk, Dakshina Kannada district, Karnataka has tried this technology and found very good results in his vegetable crops. He has used dead birds as source of animal waste (not waste meal).

Poultry Waste Meal is a dry powder manufactured from dead birds and poultry wastes like feathers, chicken legs, blood, bone and non edible portion of birds. These poultry waste meal manufacturing units are called Poultry Waste Rendering Plants. Since waste meal is pre cooked, protein in this material is already denatured. So, fermentation takes place very fast and amino acids are released in the medium.

On the other hand, if we use the fresh waste, it takes few months to get dissolved in the fermenting medium. This concept of fermenting the animal waste is already established in the field with other wastes like Human Hair, Fish Wastes and Dead Livestock Animals. Many farmers in India are getting very good results in their agriculture crops by using FISH AMINO ACID.

Income from Chicken amino acid derived from a single dead bird is more than the cost of a live bird

Processing of Dead Animas as ferilizers is well documented in VRUKSHA AYURVEDA also. Team of organic farmers in few parts of Karnataka and Maharashtra are producing GONANDAAJALA. In Kannada, it is called ಗೊನ್ನಡಾಜಲ. This is Fermented Amino acid liquid produced from Dead Cow or Calf.

Farmers make more than 50,000 to 1 lack Rupees from a dead cow. Any dead animal like Sheep, Goat, Dogs, Cats, etc can also be used for this purpose. Here, procedures are different from making of fish amino acid. They use cow dung, cow urine, butter milk, jaggery, papaya for enzymatic action, etc. Big cement / plastic tank (as per animal size) is required to keep the medium anaerobic. Even though the procedure is laborious, it is high yielding tonic for any crop.

There is good demand for this as a commercial product. To prepare Fish Amino acid, only fish wastes and jaggery are required. To make Chicken Amino Acid Liquid Tonic, one can follow the making of fish amino acid.

Here, I would like to drag the attention of Indian public to have few small rendering plants at taluk level with the help of associations / self help groups. Definitely, there will be good parallel income from selling dead birds and poultry wastes. Surely, it will boost up agriculture income with this organic fertiliser and with minimum investments. This will be a significant breakthrough in preventing environmental pollution by preventing improper waste disposal.

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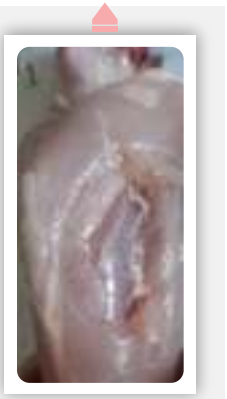

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