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DDD

OPEN INNOVATION HITS ITS STRIDE AT NOVUS

CHESTERFIELD, MO (September 5, 2024) – A new director at NOVUS is driving innovation at the intelligent nutrition company.

Gaurav Shah recently joined NOVUS as the new associate director of innovation and business development. He is responsible for routing Novus' innovation pipeline and strategy in the newly created role.

"While gaurav-shahwe're working internally on new projects, services and solutions, we know there is a whole world of innovation beyond our labs," says Associate Vice President of Global Strategic Marketing, Technology and Innovation Abishek Shingote. "It's not enough for us to say we will be innovative; we have to do it. Gaurav's focus is on business development that will drive new growth and support our customers globally."

At NOVUS, Shah is updating the company's innovation capabilities by leveraging its open innovation model.

"Something that can slow down innovation is being stuck in your competencies or feeling the need to fully own new competencies before developing something," Shah says. "With open innovation, the goal is to work closely with start-ups, universities, established companies, and even customers that are already competent in what we want to do. We're joining forces with those partners to deliver value to the industry."

Understanding that new ideas, technology and services can come from many different places, Shah says NOVUS is looking for partnerships that match its strategic interests: animal nutrition and health feed additives that lead to better performance.

"NOVUS has a good track record of delivering disruptive technology – like the first liquid methionine, the first bis-chelated trace minerals, and now embedding functional additives in corn kernels with INTERIUS™ technology," he says. "So, finding partners that can help us deliver something new through INTERIUS™ technology is certainly a goal."

Shah says for NOVUS innovation is not a "good to have" it's a "need to have" and that the new open innovation platform coupled with his efforts to connect the company to external partners will mean big things for customers and the feed additive industry in the years to come.

"The fact that we're investing in new and expanded technologies and that we've created a very clear structure to evaluate ideas and partnerships and bring products to market shows NOVUS is serious about innovation. We're ready to talk with others who are too."

Shah comes to the leader in intelligent nutrition after serving as business development manager for BioResource International, Inc. (BRI), and as global director of the feed digestibility category at Adisseo. His education includes a master's degree in microbial biotechnology from North Carolina State University (U.S.) and a post-graduate degree in patent law and intellectual property.

To learn more about NOVUS and to contact Gaurav about partnership opportunities, visit novusint.com.

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Novus International, Inc. is the intelligent nutrition company. We combine global scientific research with local insights to develop innovative, advanced technology to help protein producers around the world achieve better results. NOVUS is privately owned by Mitsui & Co., Ltd. and Nippon Soda Co., Ltd. Headquartered in Chesterfield, Missouri, U.S.A. novusint.com.

NOVUS partnering with biotech company to develop new feed additives

CHESTERFIELD, MO (September 24, 2024) – The leader in intelligent nutrition, Novus International, Inc., and Ginkgo Bioworks (NYSE: DNA), which is building the leading platform for cell programming and biosecurity, today announced a partnership to develop advanced feed additives designed to meet the evolving needs of the animal agriculture industry. NOVUS will utilize Ginkgo Enzyme Services to build more efficient enzymes that can be produced cost-effectively.

With the agricultural sector facing heightened volatility, including rising feed costs and tightening margins, NOVUS is committed to supporting its customers by optimizing the health and performance of livestock. The partnership aims to bring cutting-edge technologies to market, enhancing the sustainability and efficiency of animal production systems. These innovations are intended to improve the overall well-being of chickens, pigs, and cows, thereby supporting producers in delivering nutritious and affordable animal products to consumers.

“With the challenges and volatility facing the agriculture industry, a multifactorial approach is needed for producers to meet their financial goals and end customers to continue to enjoy nutritious and affordable meat, milk, and eggs,” says Abishek Shingote, NOVUS Associate VP of Global Strategic Marketing, Technology and Innovation. “This multifactorial approach requires advanced technologies combined with application knowledge. The partnership with Ginkgo Bioworks puts NOVUS on the path to create new technologies that support health and performance consistency in chickens, pigs, and cows.”

Shingote said the products NOVUS and Ginkgo Bioworks are working to develop came out of conversations with NOVUS customers and deep analysis of industry needs.

“Innovation is at the heart of NOVUS. Sustaining thriving livestock is a challenge, especially against economic, environmental and regulatory headwinds,” Shingote says. “We make it our mission to find new and novel ways to support our stakeholders and the industry.”

Ginkgo Bioworks is the leading horizontal platform for cell programming, providing flexible, end-to-end services that solve challenges for organizations across diverse markets, from food and agriculture to pharmaceuticals to industrial and specialty chemicals.

“Partnering with NOVUS presents an exciting opportunity to apply Ginkgo’s enzyme development services in a very important domain,” says Dan Rosmarin, Vice President, Commercial at Ginkgo Bioworks. “Together, we can accelerate the development of innovative products that offer tangible benefits to the animal agriculture industry, with the potential to enhance both productivity and sustainability. This partnership will leverage Ginkgo’s research innovation platform combined with NOVUS’ animal feed application knowledge, putting us on the path to create innovative technologies that meet the evolving needs of the livestock industry.”

NOVUS is the intelligent nutrition company providing solutions for the animal agriculture industry around the world. The company’s portfolio includes trace minerals, nutritional enzymes, feed digestibility and meat quality solutions, and methionine supplementation products, as well as a network of experts globally who provide guidance on management best practices. To learn how NOVUS is Made of More™, visit novusint.com.

Ginkgo Bioworks is the leading horizontal platform for cell programming, providing flexible, end-to-end services that solve challenges for organizations across diverse markets, from food and agriculture to pharmaceuticals to industrial and specialty chemicals. Ginkgo Biosecurity is building and deploying the next-generation infrastructure and technologies that global leaders need to predict, detect, and respond to a wide variety of biological threats. For more information, visit ginkgobioworks.com and ginkgobiosecurity.com, read our blog, or follow us on social media channels such as X (@Ginkgo and @Ginkgo_Biosec), Instagram (@GinkgoBioworks), Threads (@GinkgoBioworks) or LinkedIn.

To learn more about how you can bring innovative biological solutions to life, learn more at Ginkgo Enzyme Services.

Press contact

Ginkgo Bioworks: press@ginkgobioworks.com

Novus International: Elizabeth.Davis@novusint.com

CLFMA OF INDIA Welcomes Its New Dynamic Leadership Team (2024-2026)

CLFMA OF INDIA, a non-profit organization and the apex chamber representing the "One Voice" of the livestock industry, proudly announces its newly elected leadership team for the term 2024-2026. Established in 1967, CLFMA has played a pivotal role in promoting the animal husbandry sector, focusing on balanced animal nutrition to enhance productivity. Since 2002, it has grown to represent a diverse membership of over 250 stakeholders, including dairy, poultry, and aqua sectors, as well as feed additives manufacturers, breeders, integrators, and vaccine producers.

On **20th September 2024,** the new Managing Committee and Office Bearers of CLFMA OF INDIA officially took the charge following the Election. The newly **elected Chairman for the period 2024-2026**, **Mr.Divya Kumar Gulati,** Managing Director of **Nurture Technology**, leads the association along with the other newly elected office bearers, an experienced and capable team, committed to driving innovation and growth in the Indian livestock sector.

A Legacy of Leadership

The outgoing Chairman, **Mr. Suresh Deora**, Director of **S.A. Pharmachem Pvt. Ltd.**, has been an instrumental force in CLFMA's recent success. Under his stewardship, CLFMA has grown in stature, building stronger government engagement and hosting

numerous impactful seminars. Mr. Deora's expertise in human and animal nutrition, coupled with his significant influence in industry forums such as the Indian Red Cross Society and the India-China Chamber of Commerce and Industry, set a high benchmark for the association. His dedication has been deeply appreciated, and his legacy will serve as a guiding light for future leaders.

Introducing CLFMA OF INDIA Chairman Mr. Divya Kumar Gulati

Bringing over 30 years of invaluable experience in healthcare, nutrition, and the food industry, **Mr. Divya Kumar Gulati** is well-poised to lead CLFMA into its next chapter. As a pioneer of probiotic culture in Indian shrimp farming and a champion of sustainable farming technologies, Mr. Divya Kumar Gulati has a proven track record of introducing innovative solutions that have transformed industry standards. His ability to merge modern technologies with traditional ayurvedic herbal ingredients has yielded groundbreaking results in poultry and dairy farming.

For over 12 years, Mr. Divya Kumar Gulati has played a key role within CLFMA OF INDIA, most notably as Deputy Chairman. His participation and expertise in navigating government relations, especially with the Ministry of Fisheries, Animal Husbandry, and Dairying, has been instrumental in shaping policies that benefit the livestock industry.

CLFMA's New Leadership Team 2024-2026

Following Office Bearers were elected for the period 2024 – 2026:

1. **Chairman**: Mr. Divya Kumar Gulati, Nurture Aqua Technology Pvt. Ltd.
2. **Deputy Chairman**: Mr. Sumit Sureka, Shivshakti Agro (India) Pvt. Ltd.
3. **Deputy Chairman**: Mr. Naveen Pasuparthy, Nanda Feeds Pvt. Ltd.
4. **Deputy Chairman**: Mr. Abhay Parnekar, Godrej Tyson Foods Ltd.
5. **Deputy Chairman**: Mr. Abhay Shah, Spectoms Engineering Pvt. Ltd.
6. **Honorary Secretary**: Mr. Nissar F. Mohammed, Coastal Exports Corporation
7. **Treasurer**: Mr. R. Ramkutty, Niswin Enterprises
8. **Immediate Past Chairman**: Mr. Suresh Deora, S.A. Pharmachem Pvt. Ltd.

The other members of the Managing Committee 2024-2026 comprises of:

9. Mr. Rajneesh KR Jha	:	Anmol Feeds Pvt. Ltd.
10. Mr. Balaram Bhattacharya	:	Avitech Nutrition Pvt. Ltd.
11. Mr. Vijay D. Bhandare	:	Bhavani Agrovet Pvt. Ltd.
12. Dr. Prashant Shinde	:	Cargill India Pvt. Ltd.
13. Dr. Saikat Saha	:	Evonik India Pvt. Ltd.
14. Capt. (Dr.) A.Y. Rajendra	:	Godrej Agrovet Ltd.

15. Mr. Anushrav Gulati	:	Herbs & Health Biotech Pvt. Ltd.
16. Dr. Devender Hooda	:	Huvepharma SEA (Pune) Pvt. Ltd.
17. Dr. Vijay Makhija	:	Intervet India Pvt. Ltd.
18. Mr. K A Sujit Chandan	:	Komarla Feeds & Foods Pvt Ltd
19. Mr. Anil M.	:	KSE Limited
20. Mr. R. Lakshmanan	:	Shanthi Feeds Pvt. Ltd.
21. Mr. Jaison John	:	U. S. Soybean Export Council, Inc.

With this new leadership team in place, CLFMA OF INDIA is poised to continue its mission of strengthening the livestock industry and fostering innovation, sustainability, and collaboration across sectors. Together, they aim to create a robust ecosystem that nurtures growth and addresses the evolving challenges of the industry.

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03 Induces resistance to environmental transition stress impact on gut health

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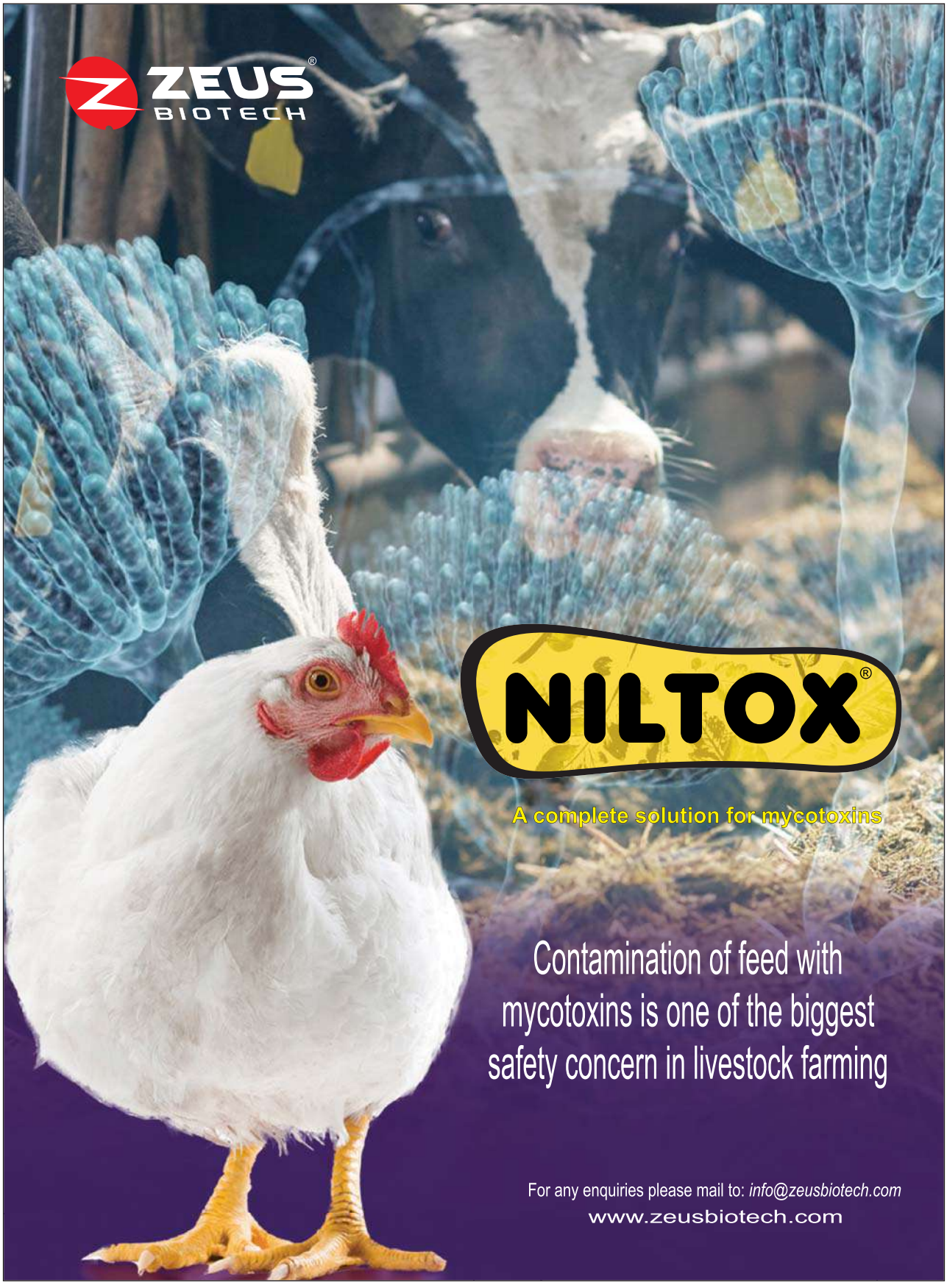
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38th Edition of SPACE 2024Exhibition from September 17 to 19, 2024in Rennes, France, Resounding Success – Ricky Thaper (www.rickythaper.com)

The SPACE Expo in Rennes, France, a leading platform for innovation and excellence in Poultry, Aqua, Dairy & Livestock farming, with more than 1,400 exhibitors from different countries shared their expertise and innovations focusing on energy conservation & production, the poultry, cattle, the pig sectors and animal nutrition. More than 1,15,000 French and International visitors from over 122 countries visited this important poultry and livestock exhibition over the three days. The business visitors were happy and satisfied as they find new partners and discover innovations, with the aim of contributing to food self-sufficiency in their home countries.

Each edition of SPACE Rennes covers the full spectrum of products and services, from veterinary equipment, feeding stuff and animal breeding. Additional value derives from the educational program.SPACE 2024 developed the political dimension of discussions with livestock sector stakeholders. These visits reinforce SPACE as a platform of expression and discussion to advance the major issues regarding the future of the livestock sectors.

Mr. Marcel DENIEUL, President of SPACE said said SPACE is here to give its exhibitors the chance to present their products and solutions to its visitors and visitors will therefore be able to discover new products and existing solutions, compare the various options available, get advice from experts to help them to make the right choices and plan their investments with all the information they need at their fingertips.

Photo 1: Mr. Ricky Thaper with Mr. Marcel DENIEUL, President of SPACE

SPACE served as an observatory for international agricultural policy and provided its participants with solutions and ideas to help them achieve their goals, thanks to its technical expertise, innovations and conferences.

At Biochem booth had good interaction with Dr. Sana Makhlouf. BiochemCompany

headquarter is located in the northwest German town of Lohne, supplying high quality feed additives for poultry and livestock. As a global company, Biochem feed additives are characterised by efficiency, quality and sustainability. From intestinal health, mycotoxin management, feed safety and nutrient efficiency to immune stimulation Biochem offer solutions to animal nutrition and animal health. Dr. Sana Makhlouf told that more than 200 employees dedicate their knowledge and skills in development, production, registration, marketing, logistics, and sales departments. Biochem operate globally with more than 50 retail partners and 16 subsidiaries on four continents.

With more than 360 experienced employees from 30 nations, Biochem team in constant contact with farmers, the feed industry, universities and veterinarians. Dr.BhaskarChoudhry is heading the Biochembusiness in India which has good growth in terms of volumes and sales under Dr.Bhaskar leadership.

According to Ms. Ane Marie QUEMENER, General Commissioner of SPACE, in 38 years, SPACE has become an essential event for all.Created by the leaders of the agricultural organizations, it is designed to be a place tomeet debate and exchange ideas, for all farming related professionals. Ms. Ane MarieQUEMENER added that the efforts and hard work by SPACE Team has given excellent results.

At SKA Poultry Equipment booth, we had good interaction with Mr. Massimo Ubiali, CEO. Mr. Ubiali is a dynamic leader with a strong commitment to helping customers adopt sustainable solutions for the industry through high-quality equipment. Mr. Ubiali said he has a clear vision to expand SKA's business across the region and elevate the company to new heights, all while staying true to its core principles and values. Mr. Ubiali firmly believes in empowering individuals to embrace entrepreneurship within themselves. He updated that India is a very potential market for them and their company look forward to fostering partnerships and continuing the exchange of ideas for the advancement of poultry welfare and Sustainability in the region. Recently Mr. RajendraRawat has joined

SKA Poultry Equipment, Italy for South Asia Region. Mr. Massimo extended invitation to Indian Delegation to visit their manufacturing facilities in Italy.

Photo 5: At AB Vista booth with Mr. Fernando Garcilopez Perez, Business Manager. AB Vista is a global animal nutrition technology company offering pioneering products and technical services to the global animal feed industry. Its mission is to advance nutrition through scientific research and 'feed intelligence'. AB Vista has grown to be a top three player in feed enzymes, specialising in innovative feed additives, solutions, and services for all species.In India, Mr. AtmaramYadaym General Manager, South Asia is heading AB Vista business very perfectly and efficiently.

Ms. Cecile BERTHIER, International Press and Exhibitors Information, SPACE informed that Poultry, Dairy and Aqua farmers working in all types of animal production were able to enjoy the Expo. The top buyers program run by the Business France as a part of the "Export Begins in France" project had welcomed major International Delegates from China, Senegal, Togo, Egypt, Iran, India, Kenya, Angola, Saudi Arabia, Pakistan, Mexico, South America besides European Union.

A series of conferences, debates and seminars that took place during the three days gave this year event a new dimension, as poultry and livestock farmers were able to express the needs and expectations, in line with the ambition of the creators of SPACE.Innov'Space label has been a great opportunity to publicise and promote novelties in the sector. This year 48 products, equipment or services earned the esteemed Innov'Space awards.

It was nice to meet and interact with Dr. Nemanja Todorovic, Chief Business officer, NU.ANCE Biotechnologyand Ms. Solene Gillingham, Marketing and Commercial Officer at their booth. NU.ANCE Biotechnologyis a dynamic Swiss-based biotechnology company,founded by the group of entrepreneurs, specialized in development andcommercialization of innovative feed additive products, merging expertise intechnical and scientific knowledge. At NU. ANCE Biotechnology we are committed to providing high quality feedadditive solutions said Dr. Nemanja Todorovic, Chief Business officer. With the recent acquisition of Global Nutrition International, has added a French manufacturer of technological liquid andsolid feed additives to our portfolio. This strategic move significantly contributes toincreasing range of additives developed at the highest standards of quality andeffectiveness to meet our customer needs.Mr. Joginder Singh, Business Director, is very efficiently heading the NU.ANCEB Biotechnology businessin India.

During SPACE Expo, it was nice to interact with Mr. Nipun Gupta, CEO, Dr.Paolo Doncecchi, CCoand Mr. Patel Kotula from Innova Biotechnology, Poland, focusing on production and marketing of innovative non-antibiotic products to control bacterial pathogens in environmental, food processing, and medical settings. We shared views on the antimicrobial solutions which are available or being launched based on the phage and anti-microbial peptide technology platforms of Innova Biotechnology and discussed about the future of Antimicrobial Peptides (AMPs) that work by targeting the cell membranes of pathogens, making it significantly harder for these pathogens to develop resistance.

While interacting with exhibitors, they rated SPACE as very high quality trade show. According to Amandine LEROUX, International Development, SPACE, Exhibitors and International Visitors had access to International Club which had all

facilities of translators, business meetings and refreshments for the international visitors.

The SPACE was again a springboard for employment and international trade thanks to the job-dating events organized by APECITA, and more than 800 Business to Business meetings organized by Enterprise Europe Network between exhibitors and international investors said Ms. Chloe LETELLIER, Communication Press, SPACE. For foreign visitors, visits to poultry, dairy & sheep farms and agro industrial facilities were arranged. These tours were supported by ADEPTA and Ministry of Agriculture and Fisheries.

An analytical survey so far indicates that 97% of participants think that SPACE Exhibition helps to convey a positive, dynamic image of the animal farming industry. 93% of International Visitors regard SPACE as the standard setting exhibition, offering a comprehensive and unique platform for professionals across all animal production sectors. 91% of poultry, dairy, aqua and livestock farmer's view SPACE Exhibition as an indispensable decision-making tool, enabling them to compare solutions and make informed choices whereas 88% of Exhibitors express satisfaction with the quality of their business contacts made at SPACE Exhibition.

International delegates visiting SPACE Expo appreciated the arrangements at Expo by theorganizers especially at the International Club. The meticulous planning, dedication and tireless efforts of team SPACE Rennes makes SPACE Exhibition one of the biggest Poultry & Livestock Exhibition in this planet.

Nutritional Amelioration to Mitigate Heat Stress in Layer

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Introduction

Heat stress is a threat that can lead to significant financial losses in the production of poultry in the world's tropical and arid regions. The degree of heat stress (mild, moderate, severe) experienced by poultry depends mainly on thermal radiation, humidity, the animal's thermoregulatory ability, metabolic rate, age, intensity, and duration of the heat stress. Thermal conditioning during embryonic development or early life enhances the ability of birds to tolerate heat during their adult life. Nutritional amelioration such as dietary manipulations, night time feeding, and wet feeding often, applied with timely and effective correction of environmental conditions have been proven to ameliorate the effect of heat stress in chicks and adult birds.

Stress

Any internal or external stimulus that leads to change in normal homeostasis or equilibrium of an organism is called as stress. There is a thermo neutral zone for birds (19ºC to 22ºC for laying hens) which describes the balance between the amount of heat produced and the amount of heat lost from body without any stress conditions. Heat stress is a variant of environmental stress caused by an increase in environmental temperature (and humidity) beyond the thermo tolerance of an animal. Poultry birds possess a narrow range of thermoregulatory thresholds and are sensitive to environmental temperatures, which can pose as a stressor although, this thermo neutral zone depends upon many factors like feed intake, housing conditions, etc., whenever temperature goes beyond this range, birds feel stressed and try to maintain body temperature through various mechanisms.

Mechanism of body heat regulation in poultry

All metabolic activities involved in maintenance, growth and egg production lead to heat production in birds and are influenced by many factors like species, breed, body weight, level of production, feed intake, feed quality and to an extent by the amount of activity. Generally, when birds are in comfortable environment, a balance in heat produced to the amount of heat dissipated from body occurs. The regulation of body temperature in birds mainly occurs through five mechanisms as radiation, conduction, convection, evaporation and excretion.

Heat lost through the process of radiation does not require any medium and it is transferred from a body with high temperature to the body with comparatively lower temperature, i.e. from bird to the environment. Hence, birds tend to raise their wings to let the heat dissipate from poorly feathered areas such as parts under the wings.

Heat released via conduction is a way in which heat is transferred from a body with higher temperature to a body with lower temperature by direct contact. Bird tries to get in contact with cages or other birds to lose the excess heat produced.

Body heat lost through convection happens by the removal of heat through temperature gradient with the help of a medium. Blowing cool air over the cages is an effective way to reduce heat, but it aids only when air is moving fast enough to agitate the air surrounding the birds.

When, the environmental temperature increases to an extent that birds are not able to maintain the balance of heat exchange, the mucus membrane in nasal cavity acts as a medium which helps to get rid of excess body heat through respiration. That's why; panting is considered as most obvious clinical sign of heat stress in poultry. However, panting is effective only if humidity is not too high. Therefore, hot and humid conditions are more stressful than the hot dry conditions.

Excretion is another method to lose body heat, wherein, birds increase their water intake up to double during hot periods and excrete the heat through urine and wet faeces. There are many other behavioral, physiological, hormonal and molecular changes that occur in birds during heat stress to maintain their body temperature. These signs may be temporary or may persist for longer duration if the problem of heat stress continues.

NUTRITIONAL AMELIORATION

It is important that the diets are balanced with important nutrients such as amino acids, calcium, sodium, phosphorus, or vitamins, especially the water-soluble ones. Include highly digestible ingredients in feed, to provide all the necessary nutrients for better absorption, despite the reduction in the feed consumption.

- Feed should be made denser with major nutrients, vitamins, and minerals to compensate for reduced intake
- Protein level in feed should be reduced aptly with concomitant increase in digestible amino acid levels
- Proteins from vegetable source have lower heat increment and are rich in Arginine, and the absorption of latter is compromised in heat stress conditions
- Fats should be increased by 2 to 3% at the cost of carbohydrates without changing Metabolizable Energy (ME), due to the less heat increment of fats
- Calcium levels need to be increased without disturbing the Ca: P ratios
- Micro-nutrients like trace minerals and vitamins need to be increased by 1.25% to compensate for lower intake

Energy

The heat increment produced by protein metabolism is higher than that of carbohydrates, which in turn is higher than fat. This is the reason to increase dietary energy levels by inclusion of oil and reduce protein level under heat stress situations. Also, emulsifier needs to be added in diet for better digestion and absorption of oil.

Protein

The protein requirement during heat stress is decreased because of reduced production performance. It has been observed that protein synthesis is more affected than breakdown leading to reduced protein formation. The decreased protein synthesis cannot be compensated by giving high dietary protein. The high dietary protein level at high temperature reduces feed efficiency, increases stress and mortality, reduces body weight and production performance of birds. Hence, nutritionists reduce crude protein (CP) percentage in feed to cope up with this situation.

Minerals

The percentage of mineral mixture is increased in diet depending upon the reduction of feed intake. Normally 15-20% increased mineral diet is provided to birds, so that it helps to reduce production and mortality during heat stress. Chromium has proved to be one of the best nutrients during heat stress conditions to control increased glucose

levels in blood, thereby increasing glucose uptake into the cells making it available for various body functions. The action of insulin is strengthened by chromium in vivo and in vitro. There are two theories about the mechanism of action of chromium, i.e., it increases the number of insulin receptors on cells and, it enhances the capacity of already existing insulin receptors to get attached with more glucose molecules to increase its inflow.

Vitamins

As feed intake reduces during summer, the amount of vitamin premix is increased in the feed to meet the requirement of birds. Oxidation of feed leads to production of free radicals and it is an auto catalytic process. The production of peroxides during the process of oxidation, further interact with air to produce hyper oxides. These compounds are unstable and produce more free radicals generating a chain reaction. This damages the cells disrupting the normal functioning and reduces absorption. Birds can synthesize Vitamin-C in general, but this amount is insufficient under heat stress conditions, high relative humidity, high productive rate and parasitic infestation. The antioxidant activity of Vitamin-C protects against the damage caused by free radicals. Also, Vitamin-E supplementation is beneficial for birds in egg production, associated with an increase in feed intake, egg yolk and albumin solids. Vitamin-E should be added before, after and during the heat stress conditions for better production.

Electrolytes

Electrolytes help in regulating the acid base balance, osmotic pressure of cells and neuromuscular functions. There is increased excretion of electrolytes during heat stress, and addition of appropriate electrolyte salts supports in balancing this loss. Sodium bi carbonate has positive impact on water intake and reducing systemic acidosis.

Osmolytes

There is excessive loss of body water in heat stress. Supplementation of osmolytes supports in maintaining the body water balance improving the nutrient influx into cells. Betaine, an osmolyte and methyl donor acts as an anti-heat stress agent by promoting favorable gut microbiota, protecting internal organs, and increasing fatty acids catabolism in chickens leading to improved broiler performance. That said, the form of betaine been supplemented plays a pivotal role, in its aforesaid mechanisms of action, with the betaine from natural source been a better and reliable form than synthetic ones.

Inclusion of select combination of organic acids helps in achieving eubiotic conditions in gut, improving the tight junction integrity, thereby reducing the susceptibility of birds to infections, consequently improving the birds' growth and productive performance. Also, probiotic and prebiotic supplements used in heat-stressed birds to reduce the detrimental effects of heat stress by promoting the growth of beneficial bacteria.

Conclusion

Heat stress is one of the challenging periods for poultry and it has negative impacts on bird's performance in terms of reduced growth and production, and increased mortality. Heat stress leads to challenged gut health conditions and oxidative stress through generation of Reactive oxygen species (ROS). A holistic approach comprising of strategies to optimize farm, feed, and health, must be adopted to handle challenges arising out of heat stress. Supplementation of various dietary additives in right concentrations will help in reducing the adverse effects of heat stress.

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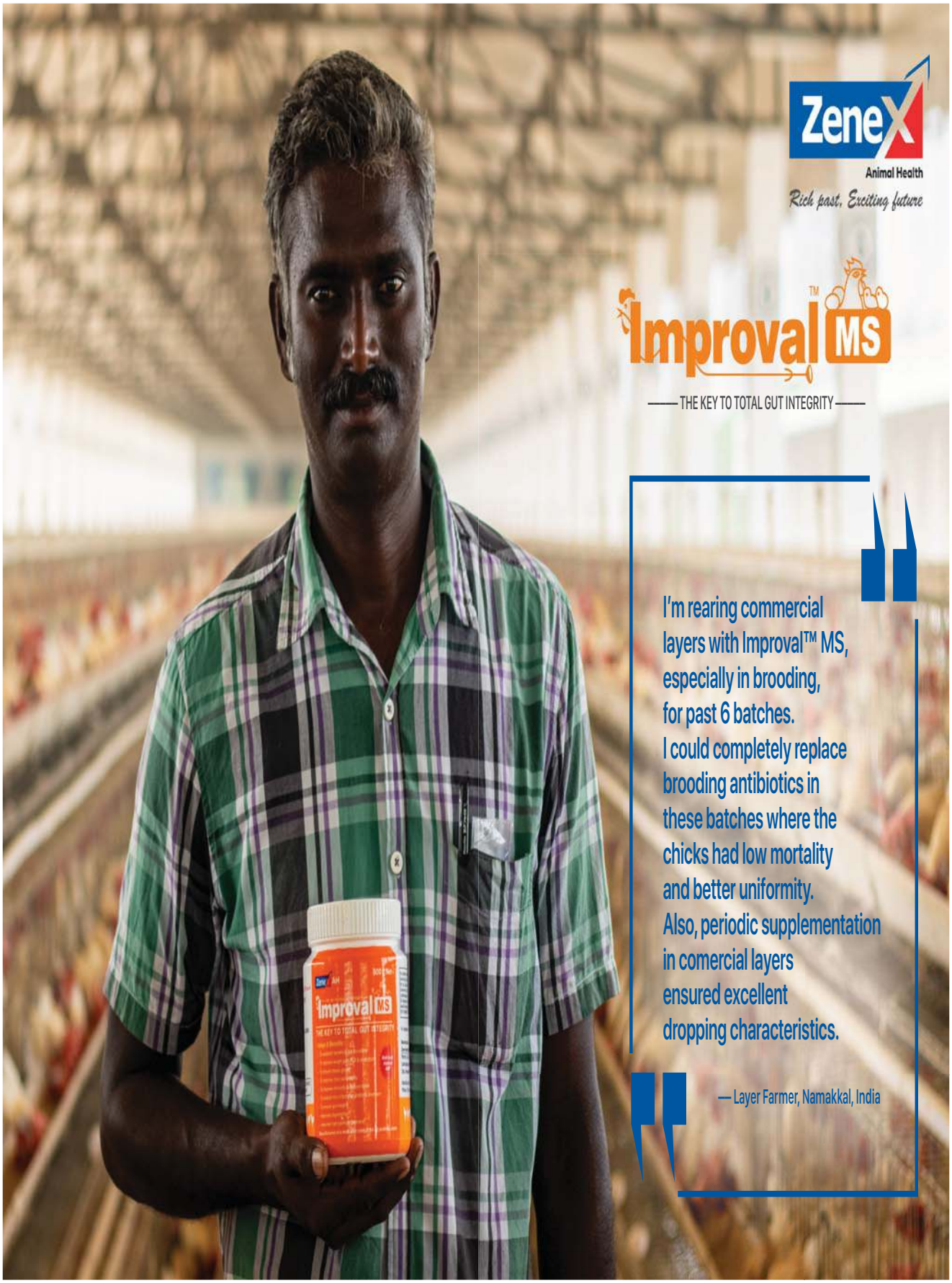
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— Layer Farmer, Namakkal, India

ONE HEALTH APPROACH IN CONTROLLING THE ANTI MICROBIAL RESISTANCE

Gondu Sai Deepthi1, R. Ranjini2, S. Saranya3, R. Savitha4, G. Elaiyaraja5
1,2,3,4 – M.V.Sc Scholar, Department of Veterinary Microbiology, Madras Veterinary College, Chennai – 07. 5 –Assistant Professor, Department of Veterinary Microbiology, Madras Veterinary College, Chennai – 07.

Introduction

Antimicrobial resistance (AMR) causes significant impact in treating the infections globally. The main drivers of this resistance are the overuse of antibiotics, antifungals, antivirals, and antiparasitic drugs in humans, animals, and agriculture. Microorganisms develop their resistance to these drugs through a process called Darwinian selection. When they are exposed to antimicrobials, they adapt by acquiring and expressing resistance genes, which they can then share with other bacteria. This leads to the spread of resistant bacteria and their genes in various environments.

To address this complex issue, a collaborative approach called One Health is recommended. One Health aims to tackle antimicrobial resistance more effectively by considering the interconnectedness of human, animal and environmental health and working together for optimal health of people, animals and environment.

Uses of Antimicrobials in Humans, Animals, and Plants

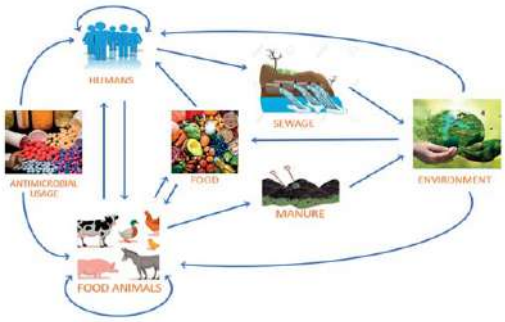
Antimicrobials are used in humans and animals, including domestic mammals, birds, fish, and honey bees. In horticulture, certain antimicrobials are used to treat bacterial infections in fruits. In food-producing animals, antimicrobials are often administered to the entire group through feed or water, even when not all animals are infected. This practice is called metaphylaxis and is justified due to high risk of infection in the group. This practice is linked to the development of antimicrobial resistance.

Potential Hazards to Community Well-Being and Animal Health

Multi drug resistant bacteria affect in treating the infections and lead to more severe illnesses, higher medical costs, and increased difficulty in finding appropriate antibiotics for further treatment.

Environmental Factors Affecting One Health

Environmental factors play a crucial role in the ecology of AMR, as many pathogenic bacteria and resistant genes have origins in the soil and other ecosystems. Large quantities of antimicrobials are produced annually and often end up in the environment through waste from pharmaceutical industries, treatment plants, and improper disposal. This introduces antimicrobial residues, microorganisms, and resistant genes into soil and water sources. In developed countries, foodborne transmission through contaminated meat, poultry, fruit, and vegetables is significant, while in countries with poor water treatment, drinking water can be a major transmission route. Global dissemination of antimicrobial-resistant bacteria occurs through trade, travel, and wildlife migration.



Strategies to Combat Antimicrobial Resistance by One Health Approaches

The WHO Global Action Plan, with a

One Health focus, addresses Antimicrobial Resistance through 5 key objectives.

1. Enhanced Awareness and comprehension of Antimicrobial Resistance through impactful communication, informative education and skill-building training. A deeper understanding of One Health aspects is crucial for groups like animal owners, farmers, veterinarians, and food industry professionals to enhance One Health antimicrobial resistance awareness using health programs, consumer campaigns, farmer outreach, veterinary consultations, and farm publications.
2. Fortify the Knowledge and Evidence Base by Monitoring and Conducting Research

   Surveillance and research are vital for identifying antimicrobial resistance issues, improving One Health understanding, supporting evidence-based interventions, and monitoring resistance trends, use, and effectiveness of control measures across sectors and establishment of integrated AMR, antimicrobial use surveillance systems.
3. Encourage the use of effective sanitation, hygiene practices, and infection prevention measures to combat the AMR.

   Focusing on food animal industries for farming with zero antimicrobials and minimizing human exposure to antimicrobial resistance involves improving food and drinking water safety, controlling pollution, and implementing foodborne pathogen reduction.
4. Elevating the Efficient Use of Antimicrobial Medications in Human and Animal Health

   To optimize the use of antimicrobial medicines in both human and animal health sectors, it is crucial to promote responsible use and develop guidelines for prescribing and stewardship programs at international standards. Investing in research and development of new antimicrobial agents, diagnostics, and alternative treatments is essential. Regulation of veterinary antimicrobial use, phasing out medically important antimicrobials as growth promoters, and some food industries are taking steps to limit their usage in animal production
5. Development of more economic strategy for sustainable investments by everyone

   This can be achieved through advancements such as additional vaccines and alternative non-antimicrobial disease control methods.

Conclusion

It is challenging to strictly separate antimicrobial classes into those exclusively designed for human or animal use, except for novel antimicrobial classes. It is advisable to prioritize the use of new antimicrobial classes for humans when few or no alternatives are available. However, the majority of existing classes can be utilized in both sectors. The objective of One Health is to optimize the overall use of these drugs which can be achieved by ensuring that antimicrobials are employed for therapeutic purposes only, rarely for prevention, and never for growth promotion.

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Arya.ag Impact Report: Empowering 85% of Farmers with Financial Services and Reducing Farm Wastage for 67%

India's largest integrated grain commerce platform accelerates financial inclusion and reduces wastage across the agricultural value chain

New Delhi, 27th September 2024: Arya. ag, India's largest and only profitable grain commerce platform, has released its latest Impact Performance Report, showcasing its transformative impact on farmers and Micro, Small, and Medium Enterprises (MSMEs) within the agricultural sector. Conducted in collaboration with 60 Decibels and sponsored by Quona Capital, the report emphasises Arya.ag's pivotal role in expanding access to financial services and reducing wastage in the agricultural landscape.

The report highlights that 85% of farmers accessed financial services through Arya.ag's platform, and 87% of MSMEs accessed working capital, underlining Arya. ag's commitment to fostering financial inclusion. The platform's unique offerings were deemed irreplaceable by 60% of farmers, who found it difficult to identify a suitable alternative to Arya.ag. Notably, 79% of farmers reported an increase in their earnings due to Arya. ag's services.

A key outcome of Arya.ag's intervention is the significant reduction in farm produce wastage. 67% of farmers reported a decrease in wastage, with 73% of individual farmers noting a reduction compared to 58% of farmers associated with Farmer Producer Organizations (FPOs). The reduction in wastage was more pronounced in South India, where 64% of farmers reported a substantial decrease in farm produce wastage, compared to 35% in the rest of India.

For MSMEs, Arya.ag's impact was equally in-depth. 86% of MSMEs reported an improved ability to plan and manage working capital, while 89% experienced enhanced access to raw materials at the right time, demonstrating Arya.ag's role in strengthening the agricultural supply chain.

Speaking about the report, Prasanna Rao, CEO and Co-founder of Arya.ag, stated, "These results validate our mission of creating equitable value chains in agriculture. By bridging critical gaps in finance and market access, we're not just improving businesses; we're transforming lives and fostering inclusive growth across India's agricultural landscape."

Looking forward, Arya.ag is committed to refining its offerings based on these insights, with an ambitious goal to impact over 10 million farmers in the next 3-4 years. The company plans to facilitate over $3 billion in agri-loans and create commerce linkages of over $4 billion, while expanding its storage footprint by more than fourfold by 2028.

As Arya.ag continues to grow, the company remains dedicated to fostering financial inclusion and business growth within India's agricultural sector, helping stakeholders across the value chain thrive in a more equitable and efficient market.

For more information: please visit [www.arya.ag] and access the complete Impact Performance Report

About Arya.ag

Arya.ag is India's largest and only profitable grain commerce platform. It enables freedom of choice for farmers and their organisations to decide 'when' and 'to whom' they would want to sell their produce post-harvest by offering access to farmgate-level storage, seamless finance and transparent commerce. It eliminates the trust deficit in grain commerce through its exponentially growing layer of visibility and control, currently stretching across 60% of Indian districts, covering over 11,000 agri-warehouses. Arya.ag aggregates and stores USD 3 billion of grain annually while enabling disbursement of over USD 1.5 billion of loans to small-holder farmers, their organisations and other stakeholders. Arya.ag works towards creating equitable value chains in agriculture, assuring inclusive growth and greater transparency.

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WORLD WITHOUT COWS

What would happen if all the cows were suddenly gone?

New documentary filmed in 40 global locations over three years explores the impact of cattle on economies, ecosystems, cultures and human nutrition

[LEXINGTON, Ky.] – The official theatrical trailer has been released for “World Without Cows,” a newdocumentary that examinesthe multifaceted and often surprising ways cattle impact our world.Through interviews with those on the frontlines of agriculture and environmental science, “World Without Cows” explores the cultural and economic significance of cows, their role in nourishing the world and their impact on climate.

Prompted in part by the prevailingnegative—and unscientific— narrative surrounding cattle,this compelling exploration was led by Michelle Michael and Brandon Whitworth, two journalists who travel the world telling stories about agriculture.Three years ago, theyset out on an adventure that took them to more than 40 locations around the world — from the American heartland to Kenya, India, Brazil and beyond — as they sought to answer a seemingly simple question, “Are we better off in a world without cows?”

Along the way, they tapped into a global network of agricultural and environmental scientists,farmers, ranchers, academicsand other experts who offered an up-close look at the impact of cows on our world and the potential consequences of their removal.What they found was far from simple: When it comes to cows, it’s not black and white.Humanity’s reliance on cattle is more complex than often realized, and so, too, are the conversations at global and local levels about their role in enabling people and planet to thrive.

“I never thought that we would be the ones to tell this story,” Whitworth said.

“But the more we learned, it was like we didn’t have a choice,” Michael added. “We had a responsibility. We had to tell this story. Literally around the world, farmers just opened their doors to us.”

“We talked to literally dozens and dozens of people around the world — various experts in a number of different fields,” Whitworth continued. “And we posed the question: What does a world without cows look like?”

The resulting documentary, “World Without Cows,”features a diverse group of experts who explore the impact of cattle from a cultural, social, economic, nutritional and environmental perspective.This science-led discussion highlights the profound dependence on cattle in many regions of the world, the challenges of nourishing an ever-expanding global population, the essential value of animal protein, and the relationship between cattle and the environment, including their impact on biodiversity, soil health and carbon capture.

The 85-minute documentary aims to broaden the conversation, encouraging viewers to think more deeply about how cattle impact our world and discover that there’s much more to consider when it comes to cattle and the vitality of our planet.

“This isn’t just an opinion-based conversation where people are yelling their own thoughts and opinions at you,” Whitworthsaid. “These are doctors, Ph.Ds., farmers, ranchers and people who have firsthand experience and education in all these areas. It’s facts. It’s science.”

One of the experts Michael and Whitworth consulted is Jack Bobo, a food futurist and director of the Food Systems Institute at the University of Nottingham.

“For 10,000 years, farmers and ranchers have been asked to do one thing, and that’s produce more food,” Bobo said. “We’re adding a billion people every 11 or 12 years. The challenge is, every day between now and 2050, it gets harder to feed the world.”

Justin Sherrard, a global strategist at Rabobank, estimates that about one in 10 people in the world depends on cattle for their livelihood directly — more than 800 million people.

“Ultimately, we’ve got to addressevery part of the global foodsystem,” he said.

Dr. John Lynch, a climatologist from the University of Oxford, said scaling down greenhouse gas emissions is urgently needed.

“What’s the world going to look like in 30 or 40 years if we just carry on heating up the planet and making these more extreme events occur more often?” Lynch asked

“I think we could go a do a survey, and many people would say, yes, cows are the worst thing in the world for the climate,” he continued. “Cows are not the biggest contributor to climate change. That’s still fossil fuels.”

Dr. Frank Mitloehner, a professor and air quality specialist who leads The CLEAR Center at the University of California, Davis, addresses global land availability, greenhouse gas emissions and the impact of cattle on climate.

“I’m not a person telling youlivestock has no impact, or that it’s atiny impact,” Mitloehner said. “Like every part of society, animal agriculture needs to do its part and help reduce our impact on climate. We can and we should do that. But we should not make up stories of these animals being responsible for the majority of emissions. They’re not responsible for the majority of emissions.”

Visit worldwithoutcows.comto see who else is featured, view the official trailer, sign up for updates about the film and learn more about cattle and our lives, livelihood and planet.The website features a deeper exploration of the topics explored in “World Without Cows,” as well as resources and opportunities to support turning this movie into a movement — one of broader, science-based conversations about cattle.

To learn more about the filmmakers’ experiences and hear insights from their travels around the world, watch their behind-the-scenes video, “The Making of World Without Cows.”

“World Without Cows” will be featured in two upcoming film festivals, the Twelve Lions Film Festival on Sept. 28 and the San Pedro International Film Festival in November, and more film festivals appearances are planned. Visit worldwithoutcows.com to sign up for updates, find out when this documentary is coming to a screen near youorrequest a screening.

Photo Caption: “World Without Cows” is a feature-length 85-minute documentary that was filmed in 40 global locations over three years, exploring the impact of cattle on economies, ecosystems, cultures and human nutrition.

Photo Caption:"World Without Cows" is written and directed by two award-winningjournalists, Michelle Michael and Brandon Whitworth, who spent three years visiting academics, scientists, farmers and others to get an up-close look at the societal, financial and environmental significance of cows.

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Email ID: mchaurasia@Alltech.com
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About "World Without Cows"

"World Without Cows" is a Planet of Plenty® production. Working Together for a Planet of Plenty was launched in 2019 by Dr. Mark Lyons, president and CEO of Alltech, a global animal nutrition company. Planet of Plenty is a call for collaboration across industries and geographies to create and embrace science-based solutions that help agriculture provide nutrition for all, revitalize rural communities and replenish the planet's natural resources.For more information, visitworldwithoutcows.comor join the conversation onFacebook, X, Instagram and LinkedIn.

New Management at LOHMANN BREEDERS

LOHMANN BREEDERS GmbH introduces new management: Effective immediately,JörgHeierand Jurek Grapentin will take over the leadership of the company. The responsibility is now once again divided between two managing directors, each overseeing different areas of the business.

****Experienced Leadership for Operational Management****

JörgHeier (51), who has been part of LOHMANN BREEDERS for over 11 years, will once again assume the role of Managing Director of Operations after a year of sole leadership. In this role, he will focus on operational management, including administration as well as the entire production and supply chain. JörgHeier brings over 25 years of experience in the agricultural industry and previously served as Director of Global Production at LOHMANN for eight years before transitioning to management in 2021.

****Expansion of International Markets****

As of September 1, 2024, Jurek Grapentin (42) has taken on the position of Commercial Managing Director. He will be responsible for the company's commercial management, including sales, technical service, marketing, as well as PR and communication activities. JurekGrapentinhasover10yearsofexperience in international sales and management. In his previous career, he served as Sales Manager for the DACH region and Scandinavia, as well as Regional Director for Southeast Asia and the Pacific. During this time, he successfully established five subsidiaries and led teams in sales, administration, marketing, and technical support. Additionally, he brings extensive experience as a sales and administrative manager. With his expertise and international experience in sales and marketing, Jurek Grapentin will significantly contribute to the further development and success of our company.

****Strategic Direction for the Future****

This realignment at LOHMANN BREEDERS represents an essential step to meet the growing and changing market demands. With two specialized managing directors, each bringing their expertise in specific areas, LOHMANN BREEDERS will further on develop innovative solutions and ideas. The new leadership will strengthen the company's two core areas: top-quality breeding animals that fully realize their genetic performance potential, and an efficient production and supply chain, complemented by outstanding customer service and after-sales support. LOHMANN BREEDERS isthus well-preparedforfuturechallenges.

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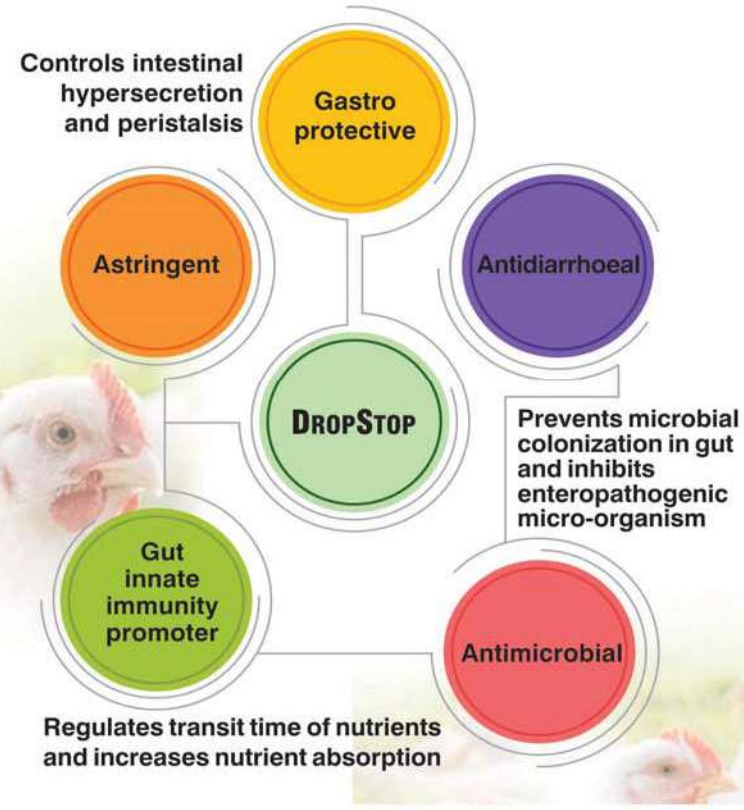

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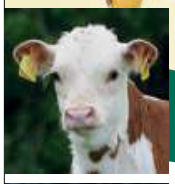

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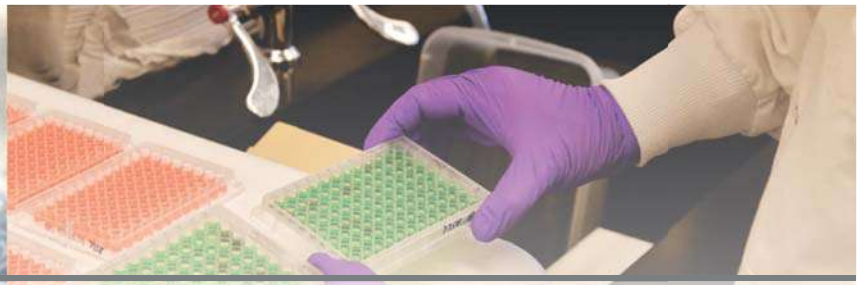

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Highest DLG awards for AAT

"Vaccybot" vaccination robot and "eggytizer" disinfection technology win gold and silver awards

Visbek, 24.9.2024. The technology company Agri Advanced Technologies (AAT) was honoured by the German Agricultural Society (DLG) with two awards for its innovations. Both technological innovations are a milestone for better animal health in poultry production.

More than 250 innovative products from around 2,100 exhibitors from 55 countries were registered for the Innovation Award at the EuroTier trade fair in November, reported Prof Heinz Bernhardt, Chairman of the DLG e.V. Innovation Commission - around a third more than at the last edition of the trade fair in 2022. The international Innovation Commission met and announced the medal winners for the EuroTier 2024 Innovation Award at a pre-press conference in Offenbach am Main today.

"We are very proud to have been honoured twice by the DLG," says Jörg Hurlin, Managing Director of AAT. "This recognises the team effort and high level of innovation that we put into the research and development of our products. Our goal at AAT is to create practical automation technology with our products that increases animal welfare and animal health in the poultry industry and at the same time counteracts the shortage of skilled labour."

The two award-winning products "Vaccybot" and "eggytizer" were developed over the past three years and brought to market maturity. AAT is thus continuing its successful product innovations. The company has established its Cheggy technology for sex determination in hatching eggs on the market for several years. Cheggy is one of the market leaders in inovo sexing and is used in several European countries and even in the USA at the end of the year.

The Gold Medal-winning "Vaccybot" is an automatic vaccination robot. It automates the process of vaccinating animals in the barn and complements the existing GRADY sorting system to simplify your workflows and maximise vaccination quality. With state-of-the-art technology, such as the 3D stereoscopic NIR camera and intelligent algorithms, Vaccybot guarantees precise injections while reducing stress for the animals. Thanks to innovative 3D measurement technology and real-time data processing, Vaccybot vaccinates poultry with pinpoint accuracy on the breast - and with up to six different vaccines at the same time. With a speed of up to 2,800 animals per hour, Vaccybot ensures maximum efficiency with consistently high vaccination quality.

The "eggytizer" disinfection system was also honoured with the silver medal. The technology sets new standards in hatchery disinfection. Germs are effectively reduced by utilising low-energy electron radiation. This leads to improved hatching rates of the chicks and better animal health, without the use of

chemicals. Traditional disinfection methods such as fumigation with formalin are not only associated with health risks for employees and animals, but are also increasingly restricted by law. The eggytizer offers a safe and sustainable alternative based on electron radiation, thus eliminating the risk of chemical residues.

You can find more information on the two award-winning products at www. agri-at.com

Agri Advanced Technologies GmbH:

The main field of activity of Agri Advanced Technologies GmbH (AAT), Visbek, is the development of specialised application technologies for poultry breeding and husbandry. This includes machines for in ovo sexing, sorting and vaccination equipment for broiler breeding as well as technical solutions for feed and egg disinfection. As part of a global network, AAT works closely with all parties involved in the value chain, as well as in research. AAT regularly cooperates with external institutions such as universities, research service providers, agricultural organisations, producers and commercial enterprises.

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UGS UNCONVENTIONAL GAS SOLUTIONS

USA: UGS installs biogas upgrading system in Michigan and Wisconsin

Biomethane plant in Berlin-Wisconsin upgrades biogas with 4000 ppm hydrogen sulfide to biomethane without pre-desulfurization

Ratingen, September 2024 – Unconventional Gas Solutions (UGS), the specialist in gas upgrading systems, announces the successful commissioning of two innovative biogas upgrading plants in the US states of Michigan and Wisconsin. The two plants, which together feed 800 Nm3/h of biomethane into the local gas grid, are the first UGS systems of their kind. The two projects exemplify the company's commitment to developing innovative and sustainable gas upgrading systems and offering economical solutions even under unusual conditions. The projects were particularly challenging due to the change in operating procedures and the high grid requirements. The first commissioning, the Three Petals RNG plant in Berlin, Wisconsin, was followed by the second: the Red Leaf RNG plant at the Maple Row Dairy Farm in Saranac, Michigan.

In cooperation with the project developer Novilla RNG, UGS played a decisive role in the development, commissioning and optimization of the systems. The specialist is thus setting a new benchmark in the treatment of biogas: when high H2S concentrations occur, operators normally have to pre-treat the biogas with costly additives or install an expensive external desulphurization system for the entire biogas volume. This reduces the H2S load to levels that can be handled by an activated carbon filter. However, this approach is often accompanied by a decisive disadvantage: The need for such systems to increase oxygen addition; the additional oxygen can also affect the product gas quality. At the sites in Berlin and Saranac, however, those responsible decided to bypass this complex process.

Decision in favor of UGS

Both plants process H2S concentrations of more than 4,000 ppm, which are sent directly into the compressor of the gas treatment plant and then directly through the first membrane stage. Instead of focusing on protecting the membrane treatment system, Novilla and UGS opted for an unconventional approach: the system uses a multi-stage, membrane-based treatment process that tolerates very high H2S concentrations of up to 30,000 ppm.

No expensive H2S pre-treatment required

In the first membrane stage, H2S and CO2 are separated simultaneously and fed into the exhaust gas. This means that no upstream costly process is required to reduce the H2S load. For optimum methane yield, the permeate from the subsequent stage is fed back into the process.

The result is almost pure biomethane in natural gas quality with only a residual H2S content. The low concentration in the reduced volume flow on the product gas side is then separated in a fine desulphurization process using an iron sponge reaction bed. Similar to the known activated carbon filters, these vessels are arranged in a lead-lag configuration. This allows the loaded material to be renewed during operation. Another positive side effect of this H2S-binding reaction is the consumption of residual oxygen. The by-product of the reaction is water, which must be removed using a TSA dryer system developed by UGS. Ultimately, this process reduces the volume of gas to be cleaned of H2S and avoids the accumulation of O2 or N2, as would be necessary with upstream H2S treatment.

Strict grid requirements in Michigan

Another argument in favor of the selected system in the Red Leaf RNG plant was the strict grid requirements in Michigan, where an O2 content of 5 ppm must not be exceeded. In

order to guarantee these extreme limit values in every situation, the catalytic deoxidation system (De-Oxo) developed by UGS was installed after the fine desulphurization of the product gas. “Remarkably, the desulphurization via the membrane unit itself, followed by the fine desulphurization on the product gas side, means that the grid specifications can sometimes even be met without using the De-Oxo system. However, the DeOxo system offers absolute safety for all our sites”, emphasizes Mark Hill, Co-CEO of Novilla RNG. This is because the oxygen remaining in the product gas is consumed in the reaction beds of the fine desulphurization system during the reaction of H2S to Fe2S3, so that the limit value of 5 ppm can be met even without the DeOxo unit installed.

Bundling technical advances at one location

For UGS, these projects represent a milestone because they combine several technical advances developed in recent years with proven results. This is particularly true in light of the fact that the biogas market is not only developing rapidly in the USA, but also in Europe. The German biogas market provides a good example. While the population of biogas plants in Europe has risen significantly in recent years to over 19,000 plants, 60% are in Germany alone. There, the considerable subsidies provided between 2004 and 2011 initially favored the production of biogas from energy crops for use in combined heat and power generation. With the incentive systems for biogas production based on energy crops, the technologies have become as standardized as the energy crops themselves – until now.

Overcoming complex technological challenges

The new pricing systems that valorize biomethane produced from manure and waste have contributed to the reduction of CO2 emissions and have significantly changed biogas qualities. Today, biogas upgrading plants must be able to cope with significant fluctuations in gas composition, large amounts of pollutants such as H2S above 5,000 ppm and changing O2 and N2 concentrations. These developments are forcing the industry to develop new solutions. Due to its high level of expertise in unconventional gas purification, UGS is in a position to technologically overcome these complex challenges: “We have innovative solutions that can fill critical niches in this market. UGS offers systems manufactured both in the USA and in Europe, ensuring innovative solutions for the upcoming market requirements,” emphasizes Ben Bikson, CTO of UGS LLC. Ben Bikson is one of the founders of the commercial gas separation membrane field and holds more than 70 granted US Patents in the membrane field.

Biomethane Plant in Berlin-Wisconsin

The membrane used by UGS separates up to 95% of the 6000 ppm H2S without upstream

desulphurisation, thus reducing the oxygen content in the biomethane product gas. The same technology is used in the compact plants manufactured by UGS in Europe.

The deoxidisation system from UGS reduces the oxygen content in the biomethane and thus guarantees compliance with the highest requirements.

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About UGS

Unconventional Gas Solutions (UGS) was founded in Houston, Texas in 2013 by a team of experienced engineers and scientists specializing in the development of specialty membranes for gas generation and processing. Since its inception, UGS has evolved from offering compact gas processing systems for well servicing companies to a global provider of systems and equipment for the entire spectrum of gas production and processing in various industry sectors. Applications include the oil & gas sector, renewable energy, industry and agriculture.

UGS has long been at the forefront of the energy transition in various industries. The international UGS team is passionate about bringing expertise, new technologies, operational excellence, customer intimacy and deep industry knowledge to gas separation.

Today, UGS develops and builds biogas and landfill gas upgrading plants based on membrane separation, pressure swing adsorption (PSA), temperature swing adsorption (TPSA), biomethane catalytic deoxidation plants, biomethane upgrading for LNG production, hydrogen purification and helium recovery plants.

The systems have been developed and manufactured in the USA since 2013 and in Europe since 2024. Due to the growing global demand for unconventional gas processing systems, UGS is expanding its sales regions in Europe with a sales team in Düsseldorf, Germany, and an R&D team in Riga, Latvia, where one of the production sites is located. UGS supplies its technologies worldwide..

„At Novilla, we are very proud of our vertically integrated development process. Our dairy projects have been designed, approved, built and operated by Novilla. We are able to accomplish this by partnering with great technology providers like UGS. In over 1.5 years of operation, combined with the digester operation, we have achieved a plant on-line rate of over 98% and we will continue to improve this. The UGS biogas upgrading plant saves us significant capital and operating costs by removing the majority of impurities in a single step.“

- Mark Hill, Co-CEO Novilla RNG

Feed safety culture is Not a "One size fit all" proposition

Sarwar Ali

Every feed miller in today's global feed industry, no matter how small or large, adheres to some degree of feed safety practices. Most of these practices have maintained a safe feed production and supplyfor many years and will continue to do so.It is widely recognized that feed safety standards are important since a significant portion of feed production is being integrated both vertically and horizontally. Despite this, the market is still complex and fragmented, requiring more than written rules, regulatory oversight, and feed safety practices.

To ensure feed safety, it is necessary to strengthen collaboration between stakeholders, share information, and develop innovative solutions. Additionally, it is important to invest in the necessary infrastructure to ensure that feed safety is maintained.Creating a safe and sustainable supply of feed requires more than just formal regulations; it is essential to understand the company's culture as well.

Unlike the rule, culture draws its power from the people, from the unspoken to the intuitive, from simple to complex observation, and from beliefs as fundamental as"This is the right thing to do" and "We would neverDo this." Rules state facts; culture lives through thehuman experience.A positive culture of feed safety can be developed and maintained by feed millers regardless of the size of their operations.

A feed safety culture can be defined as the shared values, beliefs, and norms that influence

organizational mindset and behaviour toward feed safety.Industry professionals can foster a positive culture of feed safety within their respective organizations. Experts from different segments of the feed industry will contribute their experiences and perspectives to this important discussion.

Emphasis can be placed on following-

1. Leadership and management play an important role throughout an organization, from the CEO to the feed mill operator and from the feed distributor to the farm manager.
2. The importance of regular communication, education, metrics, teamwork, and personal accountability in advancing feed safety for the future.
3. In addition to learning new skills, adaptability is an essential component of ensuring that a safe feed practice is carried out in real time.

A table like the following can help foster culture change from both a top-down and bottom-up perspective in the feed safety culture maturation process.While these qualities can be developed naturally within a supportive and positive culture, they also require conscious investment, strategic oversight and a commitment to continuous improvement.

Five Dimensions & Critical Component of Feed Safety

Mission	People	Consistency	Adaptability	Risk
siness Structure	✓ Stakeholders	✓ Accountability	✓ Industry	✓ Information & Education
ection & Expectation	✓ Communication	✓ Performance	expectation	✓ Engagement
ssaging	✓ Rewards & incentives	management	✓ Agility	✓ Verifyhazard & Risk
		✓ Documentation	✓ Crisis management	

Broiler Lifting Rates for the month of AUGUST_2024

PLACE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Hyderabad	94	87	87	80	80	80	75	75	80	80	80	80	80	82	84	87	90	100	105	107	107	107	107	109	109	109	109	109	109	109	99
Karimnagar	94	87	87	80	80	80	75	75	80	80	80	80	80	82	84	87	90	100	105	107	107	107	107	109	109	109	109	109	109	109	99
Warangal	94	87	87	80	80	80	75	75	80	80	80	80	80	82	84	87	90	100	105	107	107	107	107	109	109	109	109	109	109	109	99
Mahaboobnagar	94	87	87	80	80	80	75	75	80	80	80	80	80	82	84	87	90	100	105	107	107	107	107	109	109	109	109	109	109	109	99
Kurnool	94	87	87	80	80	80	75	75	80	80	80	80	80	82	84	87	90	100	105	107	107	107	107	109	109	109	109	109	109	109	99
Vizag	86	86	86	86	86	86	81	81	84	84	84	84	84	86	88	91	94	104	109	109	109	109	109	109	109	109	109	104	104	104	94
Godavari	97	92	92	92	92	92	85	85	88	88	88	88	88	90	92	95	98	108	113	113	113	113	113	113	113	113	113	108	108	108	98
Vijayawada	97	92	92	92	92	92	85	85	88	88	88	88	88	90	92	95	98	108	113	113	113	113	113	113	113	113	113	108	108	108	98
Guntur	103	92	92	92	92	92	85	85	88	88	88	88	88	90	92	95	98	108	113	113	113	113	110	110	110	110	110	105	97	97	98
Nammakal	90	95	95	95	98	94	94	75	75	75	85	85	90	92	92	92	93	96	98	98	103	103	103	103	93	93	93	93	93	93	93

NATIONAL EGG CO-ORDINATION COMMITTEE

DAILY/MONTHLY EGG PRICES SUGGESTED BY NECC AND PREVAILING PRICES AT VARIOUS PRODUCTION CENTRES (PC) AND CONSUMPTION CENTRE (CC)

FOR THE MONTH OF SEPTEMBER_2024

Name Of Zone / Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Average
NECC SUGGESTED EGG PRICES																															
Ahmedabad	515	515	520	525	525	525	525	530	535	540	545	550	555	555	-	560	565	565	565	565	565	570	-	570	570	570	570	570	-	-	548.7
Ajmer	480	480	483	485	485	470	475	490	490	490	495	-	495	505	520	-	532	532	532	532	547	547	547	-	-	-	528	528	-	-	507.3
Barwala	480	480	483	485	470	470	473	485	488	488	491	494	496	496	512	523	527	527	527	527	537	540	540	540	540	523	523	523	-	-	506.7
Bengaluru (CC)	510	510	510	510	520	520	520	530	540	545	545	545	545	545	545	545	550	550	550	550	550	550	550	550	550	550	550	550	-	-	538.8
Brahmapur (OD)	515	495	495	495	495	495	495	495	505	515	525	525	525	525	525	535	545	545	545	545	550	560	565	565	565	565	-	540	540	-	528.2
Chennai (CC)	515	515	515	515	525	525	525	535	550	560	560	560	560	560	560	560	560	560	560	560	560	560	560	550	550	550	-	550	-	-	546.7
Chittoor	508	508	508	508	518	518	518	528	543	553	553	553	553	553	553	553	553	553	553	553	553	553	553	543	543	543	543	543	523	-	539.2
Delhi (CC)	530	520	520	520	520	520	510	510	510	510	510	520	525	525	540	540	550	550	550	550	563	565	565	565	565	565	565	560	560	-	538
E.Godavari	505	495	495	500	500	500	480	500	510	515	520	525	525	525	525	530	540	540	540	540	545	550	550	550	550	550	530	530	535	-	524.1
Hospet	460	460	460	460	470	470	470	480	490	495	495	495	495	495	495	495	500	500	500	500	500	500	500	500	500	500	500	500	-	-	488.8
Hyderabad	495	460	465	470	470	470	470	475	480	485	490	495	500	500	500	505	510	510	510	510	515	520	525	525	525	525	505	505	510	-	497.4
Jabalpur	507	492	492	492	497	497	488	498	510	510	510	-	510	515	515	520	525	525	525	525	527	535	545	-	530	-	510	510	-	-	512.4
Kolkata (WB)	555	540	540	540	540	540	555	575	575	590	595	595	595	570	570	600	600	600	585	570	600	615	620	620	620	580	570	580	590	-	580.2
Ludhiana	502	481	481	483	485	485	485	485	490	490	490	493	496	496	498	515	525	527	527	527	529	540	540	540	540	540	540	525	-	-	509.1
Mumbai (CC)	540	525	530	535	535	535	535	540	545	550	555	560	565	565	565	570	575	575	575	575	580	585	590	590	590	590	580	570	575	-	562.1
Mysuru	512	512	512	512	522	522	522	532	545	550	550	550	550	550	550	550	555	555	555	555	555	555	555	555	555	555	555	-	-	-	542.4
Namakkal	470	470	470	470	480	480	480	490	500	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	-	496.9
Pune	520	520	520	525	525	525	525	530	535	540	545	550	555	555	555	560	565	565	565	565	570	575	580	580	580	580	580	580	580	-	553.5
Raipur	490	490	490	495	495	485	485	490	495	500	500	-	510	510	510	520	520	520	520	520	520	532	540	-	530	-	520	520	530	-	509.1
Surat	525	525	525	525	525	525	525	530	540	545	550	560	555	555	-	565	570	570	570	570	575	580	-	580	580	580	570	570	-	-	553.5
Vijayawada	505	495	495	505	505	505	485	510	520	520	525	530	530	530	530	535	545	545	545	545	550	555	555	555	555	555	530	530	535	-	528.5
Vizag	515	505	505	505	505	505	490	510	520	525	530	535	535	535	535	540	550	550	550	550	550	555	555	555	555	555	530	530	535	-	531.6
W.Godavari	505	495	495	500	500	500	480	500	510	515	520	525	525	525	525	530	540	540	540	540	545	550	550	550	550	550	530	530	535	-	524.1
Warangal	497	462	467	472	472	472	472	477	482	487	492	497	502	502	502	507	512	512	512	512	517	522	527	527	527	527	507	507	-	-	499
Prevailing Prices																															
Allahabad (CC)	529	524	529	538	538	524	524	533	533	533	543	552	557	557	562	571	576	571	571	562	581	590	590	581	571	571	562	562	-	-	554.8
Bhopal	505	505	505	505	505	505	495	500	510	510	510	-	520	520	520	520	525	530	530	530	530	535	545	-	550	530	530	510	-	-	518.5
Indore (CC)	510	500	500	510	510	500	500	515	515	515	520	-	520	515	530	540	545	540	535	535	540	550	550	-	-	-	530	530	-	-	523.1
Kanpur (CC)	529	514	514	514	514	514	514	514	529	529	529	548	548	557	562	571	581	581	581	581	581	581	581	581	581	562	548	548	-	-	549.5
Luknow (CC)	550	540	540	540	540	540	543	543	550	550	550	550	550	548	567	583	590	590	593	593	593	597	597	593	593	590	577	577	-	-	566.7
Muzaffurpur (CC)	545	545	545	545	545	530	530	535	540	540	545	550	552	552	570	585	590	590	590	590	600	600	600	600	600	600	580	580	-	-	566.9
Nagpur	520	520	520	520	520	515	510	485	485	505	505	-	515	515	515	515	530	530	535	535	535	545	545	-	-	-	535	535	-	-	520.4
Patna	545	545	545	545	545	530	530	535	540	540	545	550	550	552	570	585	590	590	590	590	600	600	600	600	600	600	580	580	-	-	566.9
Ranchi (CC)	562	552	552	552	552	552	552	558	558	558	558	558	558	558	562	571	586	586	586	581	586	595	595	595	595	595	586	586	-	-	570.9
Varanasi (CC)	550	533	540	547	550	550	550	557	557	557	557	557	557	557	567	573	583	583	583	583	586	593	593	593	583	583	583	573	-	-	567.1

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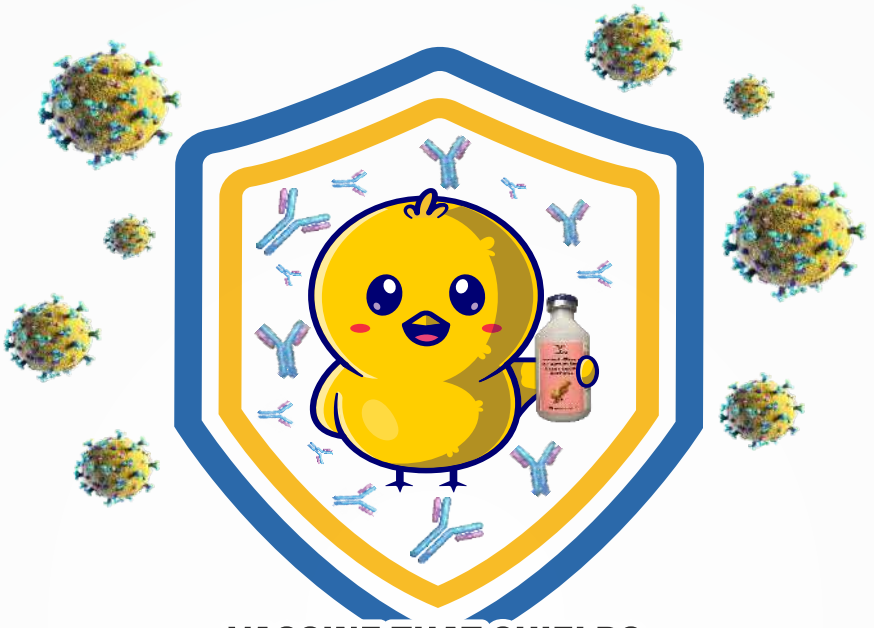

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