POULTRY TECHNOLOGY

A COMPLETE BUSINESS MAGAZINE FOR POULTRY INDUSTRY- CIRCULATED WORLDWIDE

PT

JUNE 2026

VOLUME 21 ISSUE 2

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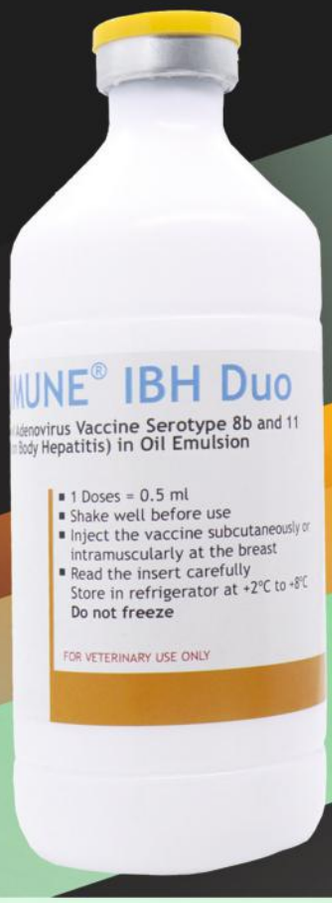

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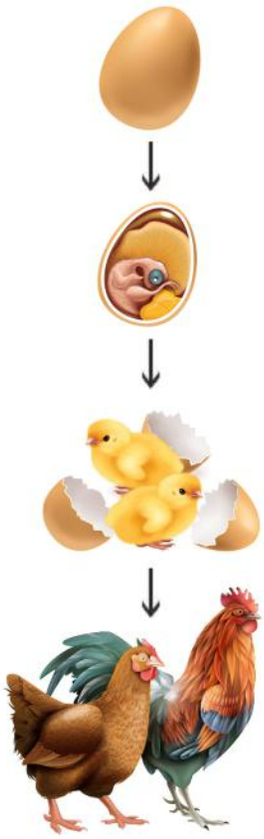

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From the Editor's Desk

Great Departures!!!

Two stalwarts lost by the Poultry Industry. Dr Anand Prakash Sachdev was an influential figure, very active in his heyday, with all-around contributions and broad exposure in Prime Breeding, Poultry Federation of India and the US Grain Council.

Dr G Devegowda, a great Professor who generated intelligent students in his academic career. A loving and smiling personality is always helpful and very active for a long time.

They are the real legends. Sadly, great personalities have departed us in recent times. The editor expresses his heartfelt gratitude and condolences.

The extreme summer conditions are causing havoc among the farming community. The El Niño effect has been attributed to such a harsh environment.

As Indian citizens have awakened towards their rights and obligations in voting with stricter controls against any manipulation, the mandate seems heavily tilted towards surprise results. A large group of people feel suppressed and exploited by political vested interests and have chosen to express their views by ballot - the results of which are clear to see.

The American President's visit to China has resulted in a resumption. of heavy bombing in Iran- one wonders what transpired between the two presidents. Instead of peace, it's an escalation of war again. We must expect the volatility to get worse under these conditions. Several economies have suffered continuous losses, and the future looks quite challenging for several countries. working towards self-reliance.

Imported stocks that have no substitutes need planning, and if possible, positioning prices! Strategic procurement. The protein is getting higher with Soya reporting lower output due to poor rains, and the synthetic Amino acids skyrocketing due to a shortage influenced by global wars. Farmers need cautious planning and reformulation of rations by expert Nutritionist needs to sustain and grow.

Strategic procurement, tailor-made solutions through nutritional formulations, using the best known quality, no compromise on hygiene and biosecurity and investing in marketing is the key!

Editor

SR Publication

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Head's	FLOCK 01	FLOCK 02	FLOCK 03	FLOCK 04	FLOCK 05
No. of Chicks	4959	6160	4900	5050	5300
Date of Arrival of Chicks	01.04.2025	19.05.2025	02.07.2025	01.09.2025	30.11.2025
Weight of Chicks (Gm)	42	44	43	43	43
FCR at Approx. 2 Kg B/W	1.115	1.096	1.117	1.109	1.107
Total Weight of Sold Bird	10500	12450	12400	12127	12781
Total No. of Birds Sold	4200	5900	4600	4870	5088
Average Weight per Birds (Kg)	2.500	2.110	2.696	2.488	2.512
Total Feed Consumed (Kg)	14000	18500	17750	15100	16000
FCR (Kg)	1.333	1.486	1.431	1.245	1.252
CFCR (Kg)	1.208	1.457	1.266	1.115	1.124
REMARKS	LPAI* - Out Break occured on 8th day, but checked on 9th day, inspite of that progress was better than the standards.	Inspite of peak summer and rates, control feeding was done to delay the growth.	Flock was kept on control feed, due to poor rate to delay the production.	Flock was kept on control feed, due to poor rate to delay the production.	Mean age 35 Days.
PRODUCT USED					
Nutrigrow & Multimune	1-10 Days (50 Gm + 5 Gm) per 1000 Birds				
Respamune	SPRAY – 1 - 10 days every day than every 3-4 days 1 ML per litre water				
Readymune (Regular by)	Day 1 till Marketing @ 50 Gm Per 1000 Birds				
Calface	On achieving 1.2 Kg B/W @25 Gm per 1000 Birds X 5 Days				
Respafeed	@ 1 Gm Per Litre Water (Day 1 till Marketing Or 500 Gm per Ton Feed)				
Intermune	@10 Gm per 1000 Birds on 12,13,14 Day				
	@20 Gm per 1000 Birds on 22,23,24 Day				

* NOTE - NO VACCINE OR ANTIBIOTIC WAS GIVEN AT ANY STAGE.

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Swine Technology Magazine Now Officially Released

In a significant move for the Indian livestock sector, SR Publications officially launched its newest, First in segment, specialized magazine, "Swine Technology," at the inaugural VIV Select India 2026 trade show.

The launch took place at the Yashobhoomi Convention and Expo Centre (IICC) in Dwarka, New Delhi, during the prestigious "Feed to Food" international exhibition, which take place from April 22 to 24, 2026.

A Milestone for the Swine Industry :

The unveiling ceremony featured a gathering of prominent industry leaders, experts, and stakeholders who came together to celebrate a publication dedicated exclusively to innovations and updated information in pork production.

"Swine Technology" (Vol. 1, Issue 1) enters the market at a pivotal time when India's animal protein sector is seeking modernization and smarter production solutions. The magazine aims to be the "first choice of every pig farmer and entrepreneur," providing a bridge between global technological advancements and local farming needs.

Key Highlights of the Magazine :

- The inaugural issue, themed for April-May 2026, focuses on the future of digitized and sustainable farming. Key focus areas include:
- Smart Farming Solutions: Implementing AI and IoT for precise farm management.
- Advanced Health & Nutrition: Modern dietary strategies and veterinary care to improve yield.
- Latest Biosecurity Strategies: Essential protocols to safeguard farms against emerging diseases.
- Expert Knowledge: A reliable source for industry news, market trends, and technical research.

Strategic Launch at VIV Select India

SR Publications' expansion into the swine segment complements their existing portfolio in poultry and livestock technology.

"The poultry and livestock sectors are entering a phase where scale must be matched by efficiency and resilience," noted industry observers at the event. "The introduction of a specialized medium like Swine Technology is a necessary step toward professionalizing the swine industry in India."

About SR Publications

SR Publications is a leading voice in the livestock media landscape, known for its comprehensive coverage of the poultry and animal husbandry sectors. With the launch of Swine Technology, the group reinforces its commitment to empowering farmers with the knowledge needed to stay "future-ready" in a competitive global market.

For more information and digital editions, visit: www.srpublication.com

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Legend SERIES 28

Dr Ramesh Thaper

Page No. 62-63

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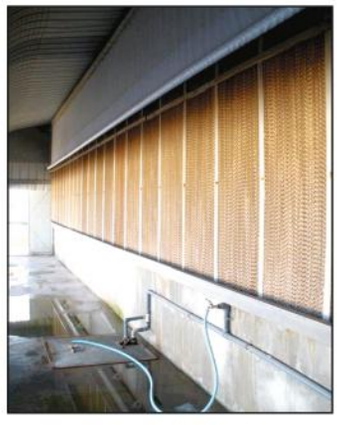

- Due to summer dust & scaling from water cooling pads get choked, thereby reducing cooling and air flow inside the shed.
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Last review date: 09/08/2024

"Additional information is available on request."

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एन्काउंटर नं. 277 : क्या इम्यूनो-मोडलेटर्स या कहिये इम्यूनो-बूस्टर्स पोल्ट्री उद्योग के लिये वरदान है?

जवाब में हां भी है, नही भी है। कारण स्पष्ट है। कुछ ब्रांड बहुत अच्छा काम करते हैं तो कुछ मध्यम श्रेणी में और कुछ पानी में मात्र खुशबु का काम करते हैं। हर ब्रांड की अपनी अलग तासीर है और तारीफ भी है परन्तु कुछ के बारे में कुछ भी कहना ठीक नहीं।

गुडगांव ट्रायल फार्म पर स्वयं कई ब्रांड का ट्रायल करने का मौका मिला। यह सारे ट्रायल ब्रायलर में ही किये गये। कुछ ब्रांड में वजन और FCR बहुत अच्छा आया, मृत्युदर भी बहुत कम रही। टाईटर विशेष रूप से 'रानी खेत' एवं 'गम्बोरो' का बहुत अच्छा आया। कुछ प्रोडेक्ट मध्यम रहे और कुछ प्रोडेक्ट का कोई भी विशेष रिजल्ट नहीं मिला। इसी लिये उत्तर हां या ना में दिया।

सबसे पहले बात कर लेते हैं सबसे पुराने प्रोडक्ट ''माईको C'' की। यह प्रोडक्ट सन् 80 दशक के अन्तिम भाग में लांच हुआ था। यह प्रोडक्ट होम्यो–बायोकेमी प्रोडक्ट था जो पूर्ण रूप से शुद्ध भारतीय खोज थी। जिसे रानी शेवर पोल्ट्री ब्रीडिंग फार्म के श्री बनी नेहरा (संजीव कुमार नेहरा) ने बनाया था। बनी साहब अक्सर मुझे फोन करते किसी फार्म पर कोई समस्या आये तो वहां का पानी एक बोतल में ले आओ। मैं ले जाता वह उसमें कुछ 'साल्ट' डालते, मुझे दे देते। उसका रिजल्ट दूसरे दिन या तीसरे ही दिन मिल जाता। उस समय एक ब्रायलर फार्म के 14 फार्म ब्रायलर प्रोडक्शन में थे जिसकी जिम्मेदारी मेरे अर्न्तगत थी। इस प्रकार यह ट्रायल 2–3 साल चला। इसके बाद बनी साहब ने 'माईको–सी' के नाम से पाऊडर फार्म की 90 ग्राम का पैक निकाल दिया। यह 90 ग्राम किसी भी उम्र के चिक्स या बड़े ब्रायलर या लेयर में सप्ताह में एक बार 3000 पक्षी को पिलाना था हर सप्ताह 3–4 घण्टे के पानी में। प्रोडक्ट चला, अच्छा चला। साथ में कई ट्रायल भी होते रहे।

यह वह जमाना था जब ब्रायलर या लेयर में काक्सी जरूर आती थी। 4–5 प्रतिशत तक मोर्टीलिटी आम हो जाती थी। एक फार्म पर 3 पेन 1000 के हिसाब 3000 ब्रायलर डाले गये। बीच के पेन में माईको–सी चलाया गया। फीड में उस जमाने के काक्सीडियो स्टेट डाले गये। पहले उन दोनों पेन में जिसमें माईको–सी नही दिया जा रहा था। आऊटब्रेक हुई। तुरन्त उन्हें एम्प्रोलियम का ट्रीटमेन्ट दिया गया। 2 दिन बाद माईको–सी के लॉट में भी काक्सी आ गई। एक ब्रायलर मरा। यहां भी तुरन्त एम्प्रोलियम चला दिया गया और 30 ग्राम माईको–सी भी एक पानी में दिया गया। चौथे–पांचवें दिन पूर्ण विराम लगा। माईको–सी लॉट में 1 प्रतिशत मोर्टीलिटी और दोनो में 5 एवं 6 प्रतिशत मोर्टीलिटी दर्ज हुई। अच्छे आईनोफोर आने के बाद काफी हद तक काक्सी की समस्या अब खत्म हो गई है।

इसी प्रकार किसी फार्म पर भयंकर CRD आ गई। पास में गेहूं निकाला गया था। भयंकर इस लिये कि फेफडे–लीवर

This article is dedicated to
Dr. A.P. Sachdev

और दिल पर सफेद मोटी पर्त जम गई थी। उसमें तुरन्त प्रति दिन माईको–सी दिया गया और हर पानी में एमोक्सासलिन दिया गया। चमत्कार देखने को मिला कि दूसरे ही दिन दिल, कलेजी और फेफडे के उपर जो सफेद झिल्ली थी वह बिलकुल साफ हो गई। तीसरे दिन से मोर्टीलिटी में कमी आने लगी।

बनी साहब का कहना था कि फीड वह जितना खाते हैं सारे विटामिन और मिनरल्स पूरे है, परन्तु यह पूरा इनकी पाचन क्रिया निचोड नहीं पाती। यदि हर हफते इन्हे माईको–सी दे रहें है तो यह भी उन्हें उपलब्ध हो जायेगा। इस पर भी एक ट्रायल किया गया लेयर्स में। उत्पादन शुरू हुआ तो 5000 के फलॉक में 2500 को माईको–सी पर रखा गया जिसमें विटामिन्स और ट्रेस मिनरल्स नहीं डाला। दूसरे 2500 में सबकुछ था परन्तु माईको–सी नहीं दिया गया। स्वर्गीय रामनाथ जी फीड सप्लाई करते थे। घबरा गये कि कहीं कुछ गडबड ना हो। मैंने कहा मैं हर हफते वहां जाता हूं, अगर कुछ गड़बड़ होगा तो तुरन्त बदल दुंगा। पूरे एक साल चला। मै उत्पादन देखता, शेल क्वालिटी देखता और सुपरवाईजर को कह दिया था कि अगर मुर्गी लंगड़ी हो तो तुरन्त मुझे बताना। अन्त में जब सब पैरामीटर चेक हुये तो लगभग 2 प्रतिशत अण्डा अधिक और 2 प्रतिशत अण्डे की ब्रेकेज में कमी माईको–सी लॉट में बेहतर थी। अब बताईये यह माईको–सी दमदार था कि नहीं। इस प्रोडक्ट की नकल दो लोगों ने की परन्तु वह कामयाब नहीं हो सके। रॉश कंपनी के एक विशेषज्ञ भारत दौरे पर आये और कहा कि ''ऐसा कोई भी प्रोडक्ट नहीं हो सकता''। खैर उन्हें कहना ही था क्योकि उनके विटामिन्स विश्व का प्रसिद्ध विटामिन था। बनी साहब की मिसेज का गारमैंट एक्सपोर्ट का व्यापार था और वह इतना बढ़ गया कि बनी साहब को उसमें लगना पड़ा और यह प्रोडक्ट बन्द हो गया। आज भी पोल्ट्री फारर्मस उस प्रोडक्ट को याद करते है। जबसे भारत में कुछ नई बीमारिया आई हैं, इस प्रोडक्ट की अत्यन्त आवश्यकता है। काश यह प्रोडक्ट फिर से आ जाता।

गंगा फीड का एक ही लक्ष्य – समृद्ध व सम्पन्न हो फार्मर हमारा ।

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- Better immunity, less mortality.
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अब बात करते है आज के उपलब्ध इम्यूनोमोडलेटर्स की। जैसे मैने कहा है कि कुछ बहुत अच्छे है और बहुत अच्छा रिजल्ट दे रहे हैं। लेकिन इतने ज्यादा प्रोडक्ट आ गये और सभी 'क्लेम दूसरे का कॉपी' कर रहे हैं। पोल्ट्री फार्मर इस्तेमाल करता है – कोई लाभ ना पाकर 'मोडुलेटर्स' से मुंह मोड़ लेता है। उसे नहीं मालूम कौन वास्तव में कारगर है और कौन नहीं। यहां चन्द कारगर प्रोडक्ट का नाम लिख दूं तो लोग मुझसे नाराज हो जायेंगे।

एक बहुत बड़ी कम्पनी ने एक इम्यूनोमोडलेटर्स का ट्रायल ब्रायलर में किया जहा सभी पैरामीटरर्स जैसे ग्रोथ, मोर्टीलिटी दर, FCR एवं ड्रेस वेट में बहुत अच्छा रहा। साथ में उन्होंने एक और पैरामीटर जोड़ा वैक्सीनेटड और अनवैक्सीनेटेड लॉट का।

वैक्सीन रानीशेवर और गम्बोरो की एक लॉट में लगाई, दूसरे में मात्र इम्यूनोमाडेलेटर लगाया। 6 सप्ताह पर चैलेन्ज किया। यहां भी यह प्रोडक्ट कामयाब रहा। बाकी रिपोर्ट मिली परन्तु यह रिपोर्ट अब तक गुप्त है। कारण स्पष्ट है यह कम्पनी करोड़ो डोज़ वैक्सीन स्वयं बनाती और बेचती है। निश्चित रूप से यह प्रोडक्ट उच्च कोटि का होगा।

वैसे एक बात साफ बता दूं भारत में असंख्य फार्म है विशेष रूप से ब्रायलर एवं क्रोयलर के जो कोई भी वैक्सीन नहीं लगाते और ''रामभरोसे'' चलते जा रहे हैं। यहीं नहीं ऐसे दो इन्टेग्रेटर भी मुझे उत्तरप्रदेश में मिले जो 1 लाख से डेढ़ लाख ब्रायलर का इन्टेग्रेशन करते है वैक्सीन नहीं लगवाते।

बहर हाल जिस इम्यूनोमाडुलेटर ने N.D. और I.B.D. का चैलेन्ज झेल लिया, इस ट्रायल की रिपोर्ट हम किसानों तक पहुंचाना चाहिये। यदि यह हकीकत है तो ऐसे प्रोडक्ट की कम्पनियों को इसे चैलेन्ज के रूप में किसानों तक पहुंचना चाहिये। देखिये कौन कौन सी कम्पनी आगे आती है।

निश्चित रूप से यह 'चन्द्रयान' यात्रा सफल हुई तो पोल्ट्री उद्योग के लिये बहुत बड़ा वरदान होगा, विशेष रूप से वायरल डिजीज के लिए। दिसम्बर से मार्च तक कहीं ना कहीं से भारत में बर्डफ्लू का प्रायः शोर–शराबा होता है, हम शायद उसे भी रोकने में सफल हो जाये। संभावना बहुत अधिक है।

एन्काउंटर नं. 278 : दुखदः क्यों, हमारा ब्रायलर उद्योग भैंस और सूअर उद्योग से भी नीचे चला गया?

एक समय था जब ब्रायलर मीट भैंस और सूअर के मीट से सदैव उपर रहता था। धीरे धीरे यह ब्रायलर मीट के पास पहुंचे और अब तो इन दोनों ने छलांग मार दी।

पहले इस बात पर ध्यान ही नहीं गया। अभी चन्द हफ्ते पहले की बात है, एक शरीफ ब्रायलर फार्मर मिलने आया। वह कुछ उदास था। वजह पूछी तो पता चला कि आज उसने अपना सारा ब्रायलर बेचा है जिसमें फीड का भी पूरा पैसा नहीं आया। परेशानी है कि फीड तो कर्जदार बना ही गई है लेकिन घर का खर्च कैसे चलाऊंगा?

उसी फार्मर ने बताया कि मजाक देखिये कि भैंस का मीट 400 रूपये और सूअर का मीट 300 रूपये प्रति किलों है और हमारे ब्रायलर का मीट 150 से 175 रूपये किलो है। यह बात मुझे मालूम ही नहीं थी क्योकि मैं यह दोनों मीट कभी खरीदता ही नहीं और ना ही खाता हूँ। यह सुनकर दुख बहुत हुआ। दुख इस बात का नहीं कि 'गुलाबी सूअर' हमसे उपर क्यो चला गया दुख इस बात का था कि हमारा उद्योग सोया पड़ा है – हमारी बाजार व्यवस्था शोषण कितना कर रही है?

हम स्वयं भी गल्तियां कर रहे है, बिना किसी 'अर्थशास्त्री' की मदद लिए रेट निकाल रहे है। सिद्धान्त वह होना चाहिये था जिससे रेट को 'पुश' मिले। वह गाजीपूर मण्डी के रेट को आधार मानकर 10–12 रूपये कम करके रेट निकाल देते है। आजकल बन्द है, अच्छा हुआ। अगर मण्डी ही बेस रखना था तो किसान और खरीददार आपस में मिलकर सौदा तय कर लेता। पता नहीं क्यों वह रेट निकालना बन्द हो गया और अब सिर्फ स्काईलार्क का रेट आ रहा है। इनका रेट मण्डी रेट से मात्र 5 रूपये कम आता है, हाँ किसी किसी आईटम में 10 रूपये तक आ जाता है। इसे भी वह 5 रूपये के लगभग रखें तो भाव बढ़ने की सम्भावना बढ़ती।

सूअर और भैंस पालन का तरीका समझ लें जो आमतौर से सदियों से भारत में होता आया है। यहा चराने की परम्परा अधिक है। आर्गनाईज फार्म बहुत थोड़े है। भैस को सुबह और शाम मुख्य रूप से भूसा और अगर हरा उपलब्ध है, उसे मिला कर दे दिया और उपर से चूनी या फीड का छोंका लगा दिया। बेचारा भैंसा अपनी मेहनत का खाता है चरकर। और अगर भैसों ने कुछ छोड़ा वह उस 'बेचारे' को मिल जाता है।

सूअर का अजीब पालन है। दिनभर घूमते फिरते, कचरे और नाली से कुछ तलाश करते और खाते है। मोदी जी के आने के बाद तो जगह जगह शौचालय बन गये है – गाँव–गाँव, घर–घर बन गये हैं। इसके पहले जो उन्हे सुबह–सुबह पोष्टिक आहार नाश्ते मे मिलता था अब वह मिल पाता है कि नहीं। यह बात एक गाँव के किसान ने बताया था। उस गाँव के कई घरों में गुलाबी और काले सूअर पले हुये थे। हम AA Institute से स्टडी टूर पर गये थे। उसने बताया कि ''सूरज निकलते ही खोल देते हैं यह भाग कर वहां पहुंच जाते है जहां सुबह से पहले के अन्धेरे में पूरा गांव 'शौच' कर के गया है।''

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सरकार की 'शौचालय' योजना ने उनका यह अधिकार छीन लिया होगा। फिर भी कुछ तो मिल ही जाता होगा। इसका दो फायदा था – पहला इन सूअरों का नाश्ता मुफ्त में मिल जाता था और दूसरा इस जगह की सफाई हो जाती थी, मुफ्त में।

जिन्होंने यह गुलाबी सूअर और काले सूअर का फार्म छोटा या बड़ा लगा लिया है वह क्या खिलाते हैं? सुबह और शाम दो बार होटल, रेस्टोरेंट एवं ढाबे से बचा हुआ जूठन खाना उठा लाते हैं वहीं खिलाते है। सुबह 8–9 बजे सब्जी मण्डी से खराब सब्जी जिसका अम्बार लगा होता है उठा लाते हैं। यह सब उन्हे मुफ्त में मिल जाता है।

सूअर और भैंस तो काफी चर–फिर कर अपने भोजन के अधिकांश भाग को पूरा कर लेती है, परन्तु काश हमारी पोल्ट्री भी ऐसा कर पाती कितना मुनाफा होता? यहां तो बैलेन्स फीड ही खिलाना है जिसमें बड़े बड़े मंहगे वैज्ञानिक लगे हैं। इन वैज्ञानिकों की मेहनत है, जब के 60–62 साल पहले पोल्ट्री में आया था तो 8 सप्ताह में 1 किलोग्राम का ब्रायलर देखकर खुश होते थे, आज 4 सप्ताह में 1500–1600 ग्राम का हो रहा है। पहले और आज के फीड फार्मूलेशन में जमीन आसमान का फर्क है आज कई आधुनिक वैज्ञानिक प्रोडक्ट फार्मूलेशन में जुड़ गये हैं।

निश्चित रूप से फीड़ की कीमत बढ़ी है और दिन बदिन अनाज, खलिया मंहगी होने के कारण फीड और मंहगी होती जा रही है जिसके निरन्तर बढने की ही सम्भावना है। यदि हमारे वैज्ञानिकों ने ARM (आल्टरनेटिव रा मेटिरियल) का उपयोग किया तो निश्चित रूप से फीड की कीमत कम हो सकती है। ऐसे फीडिग और मैनेजमेन्ट खर्च के बाद ब्रायलर का 'गुलाबी सूअर' से काफी कम कीमत पर बिकना कहां तक उचित है? क्या ब्रायलर उद्योग का कोई माई–बाप नहीं है। हमारा उद्योग इतना गैर–गुजरा हो गया है क्या? वैसे तो भैंस और सूअर का मीट और मंहगा हो अच्छी बात है– इससे ब्रायलर की डिमान्ड बढेगी।

असली दुःख इस बात का है बल्कि शर्म भी आती है कि हमारे पोल्ट्री उद्योग में सक्षम लोगों की संख्या कम नहीं। इसमें बड़े बड़े ब्रीडर, इन्टीग्रेटर, लाख एवं लाख से उपर के फार्म, हाई क्वालिटी फीड मिल्स, क्वालिटी वैक्सीन बनाने की कम्पनियां, मेडीसिन एवं फीड–एडीटिव्स की कम्पनियां शामिल है। हैचरी मशीनों से लेकर सभी प्रकार के पोल्ट्री की आवश्यक साज व सामान की फैक्ट्रियां हैं। यहीं नहीं इनवायरन्मेंट कन्ट्रोल शेड और सम्पूर्ण ऑटोमाईजेशन का काम भी हो रहा है। इन सबके बावजूद हम सुअरों से भी नीचे है।

बस एक काम जो उत्पादन के साथ साथ शुरू होना से चाहिये था, वह नहीं हुआ। होता भी कैसे? सदियों बल्कि हजारों साल में किसान चाहे वह खेतीहर हो या पशुपालक, उसके उत्पादन की बाजार व्यवस्था कोई ओर तय करता आया है। हमारी आधुनिक पोल्ट्री जो सन् 60 के दशक में प्रारम्भ हुई उसने भी बाजार व्यवस्था को नहीं अपनाया क्योंकि हमारे DNA या रक्त में व्यापार करना है ही नहीं। हमारे बाप, दादा, परदादा ने जब नहीं किया तो हम कैसे कर सकते हैं? इस उद्योग में यदि उत्पादन के लिए खानदानी व्यापारी वर्ग जैसे मारवाड़ी, गुप्ता, अग्रवाल, जयसवाल, बन्सल, मंगला, सिन्गला, वगैरह आ गये होते तो निश्चित रूप से बाजार व्यवस्था प्रो पोल्ट्री फार्मर होती।

सारी बाजार व्यवस्था उन लोगो के हाथ में है जिनका पोल्ट्री उत्पादन से कोई लेना देना नहीं है। शुद्ध व्यापारी या आढ़ती है। उन्हीं का रेट चलता है। मिसाल के तौर पर अपने देश की सबसे पुरानी और सबसे बड़ी मण्डी गाजीपूर मण्डी–दिल्ली है, इसका रेट पूरे उत्तर भारत में चलता है। हमारे 'पोल्ट्री चौधरी' इनसे समन्वय बनायें तो लाभकारी रास्ता जरूर निकलेगा। दुःखद है कि सरकार का इसमें कोई सहयोग नहीं–हां समय समय पर कुछ दिनों के लिए टोटल बैन करने में सरकार कोई संकोच नहीं करती। यह साल में 2–3 बार होता है–हां शराब की दुकान जगमगाती रहती है, क्यों ना हो इससे सरकार को तगड़ा राजस्व मिलता है।

हमारी बाजार व्यवस्था में कही झोल झाल है – कहीं गड़बड़ झाला है। हमारी एसोसिएशन हमारे बड़े उद्योग – इन्टेग्रेटर इस गम्भीर अति आवश्यक मुद्दे पर काम करें वरन् ब्रायलर उद्योग बार–बार गटर में जायेगा और कुछ अन्तराल के बाद उभरेगा।

इसमें कोई शक नहीं जब भी किन्ही कारणों से चिक्स का उत्पादन घटता है, तैयार ब्रायलर के रेट में काफी उछाल आ जाता है। यदि उत्पादन पहले जैसा ही चलता रहता तो शायद उपभोक्ताओं को 125–150 रूपये किलो ब्रायलर मीट मिल जाता लेकिन फार्मर तो बर्बाद होता। यहां एक बात बता दे – भैंस और सूअर का मीट का रेट 400 और 300 रूपये किलो है वह कुछ दिन स्थिर रहेगा और कुछ दिन बाद उपर ही जायेगा – नीचे नही। बेचारा ब्रायलर झूला ही झूलता रहेगा या 'सी–सा' खेलता रहेगा।

हमे गम्भीरता से इस मुद्दे पर विचार करना होगा। पोल्ट्री इन्डस्ट्री में काफी गम्भीर और सक्षम लोग हैं जो इस पर विचार–विमर्श कर बहुत उपयोगी फैसला कर सकते है। सूअरो और भैंसों के पास ऐसे सक्षम लोग नहीं। इस मामले में पोल्ट्री उद्योग का नसीब अच्छा है।

सारा खेल बाजार व्यवस्था का है जो सम्पूर्ण रूप से उन लोगों के हाथों में है जिनकी 'ना हल्दी लगी ना फिटकरी लगी'। उनके लिये सदैव चोखा ही चोखा है। समय समय पर हम सारा दोष 'सप्लाई और डीमान्ड' पर डालकर शान्त हो जाते हैं। सदैव यह सत्य नहीं है या 'सी–सा' भाव उपर नीचे का कारण नहीं है।

Mr. Shabbir Ahmad Khan

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70879-73825

Ravioza Group Strengthens Leadership to Accelerate Global Growth Strategy

Dr. Srijit Tripathi
General Manager

Marking a significant step towards global growth, Ravioza Group welcomes **Dr. Srijit Tripathi** to its leadership team to steer the organization's next phase of growth.

In his new role as General Manager, Dr. Srijit will oversee strategic initiatives aimed at strengthening the group's presence in Global and Domestic markets, enhancing brand positioning, and accelerating business development across geographies.

A seasoned veterinary professional, Dr. Srijit brings extensive experience in animal health, nutrition, and techno-marketing. Over the years, he has built deep expertise in product development, technical services and market expansion. His ability to integrate scientific knowledge with practical field application has enabled him to deliver consistent value across diverse markets. He has also been actively involved in conducting technical seminars, managing customer relationships, and supporting business growth through innovative strategies.

Dr. Srijit holds a strong academic background in veterinary sciences and has been associated with leading organizations in the animal health industry, contributing significantly to product positioning and market development.

Ravioza Group, A renowned house in the Poultry Industry Founded by Dr. Dinesh Kumar Arora, is simultaneously advancing its capabilities with **Biozene's** new state-of-the-art manufacturing facility, reinforcing its commitment to quality, innovation, and scalability.

With a clear focus on **Innovative** and **Precision**-driven solutions and building **Trust** among partners and customers, the organization aims to set new benchmarks in animal health and nutrition.

Dr. Tripathi's appointment marks a significant step in Ravioza Group's journey towards becoming a globally recognized and trusted name in the industry.

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080 4165 8125 | +91 93250 02558

Canafa Marks a Prestigious Presence at VIV Select India 2026;

Stall Inauguration by Minister (Commercial), Canadian High Commission

Global presence, strong industry engagement

Event Overview

VIV Select India 2026, a leading "Feed to Food" trade event, was held at IICC, Yashobhoomi, New Delhi. It brought together industry leaders, policymakers, and key stakeholders, offering a platform to showcase innovations, share knowledge, and discuss the future of the animal industry.

Stall Inauguration Highlights

Canafa participated as an exhibitor, showcasing its products and solutions. A key highlight was the inauguration of its stall on April 22, 2026, by **Mr. Eelco Hendrik Jager, Minister (Commercial), Canadian High Commission,** accompanied by Ms. Cendrine Hesson, Agriculture Counsellor; Mr. Akhil Chaudhary, Trade Commissioner, Agriculture & Agri-Food Canada; and Ms. Sonia Rai, Trade Officer- Agriculture & Agri-Food. The guests were warmly welcomed by VIV officials and Team Canafa. This proud moment was made possible through the leadership of MD Mr. Kanwaljit Singh Ahluwalia, with support from the CBS Bioplatform team from Canada. The inauguration reflected Canafa's growing global presence and industry focus.

Support from Affiliate Partners

Canafa's participation was strengthened by the support of its partners, Pathway Intermediates (South Korea) and CBS Bioplatform (Canada). Their experts were present at the stall, explaining products, answering queries, and helping visitors understand the benefits, which boosted customer engagement and trust.

Strong Visitor Engagement

The exhibition witnessed a strong and encouraging response from visitors, with Canafa's stall attracting a substantial number of industry professionals and potential clients. The level of engagement, insightful discussions, and targeted inquiries reflected a growing interest in Canafa's product portfolio. Visitors appreciated the technical expertise offered, while the collaborative approach of the Canafa team and its affiliates ensured meaningful interactions and relationship-building opportunities.

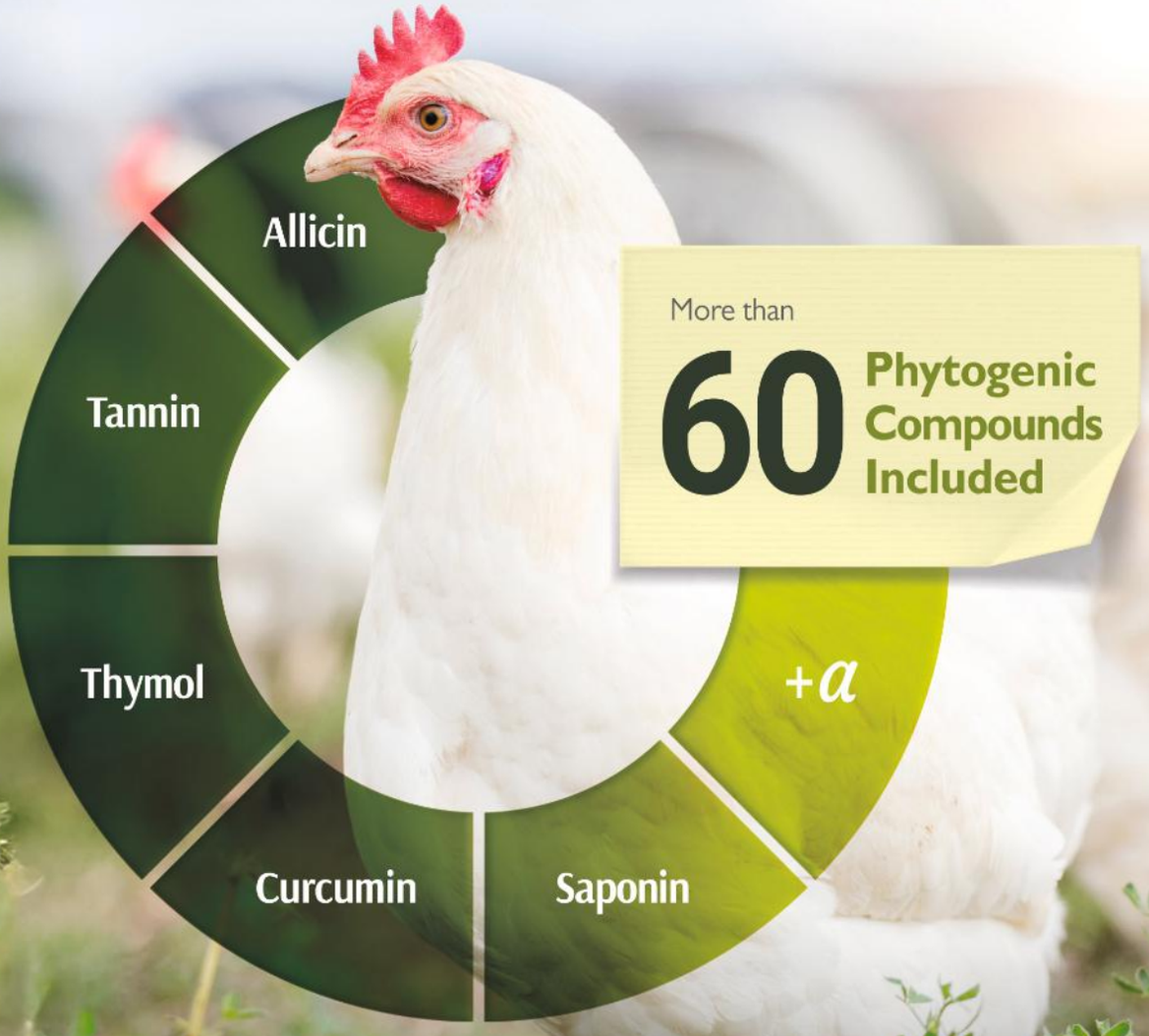
A Forward-Looking Conclusion and Continued Commitment

Canafa's participation at VIV Select India 2026 reflects its focus on innovation and active industry engagement. The event helped build stronger relationships and opened new growth opportunities. Canafa remains committed to providing sustainable solutions for the evolving needs of the animal industry.

PATHWAY® INTERMEDIATES

Q-Life®

100% Natural Protection Against Coccidiosis



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Contact : +91 98769 27764, +91-172-5010764 | **Mail :** info@canafa.in | **Website :** www.canafa.in

For more information, please visit:

Canafa Solutions official website: **www.canafa.in**

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Ms. Kritika Lamba

Sales Coordinator

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Cbs Bio Platforms

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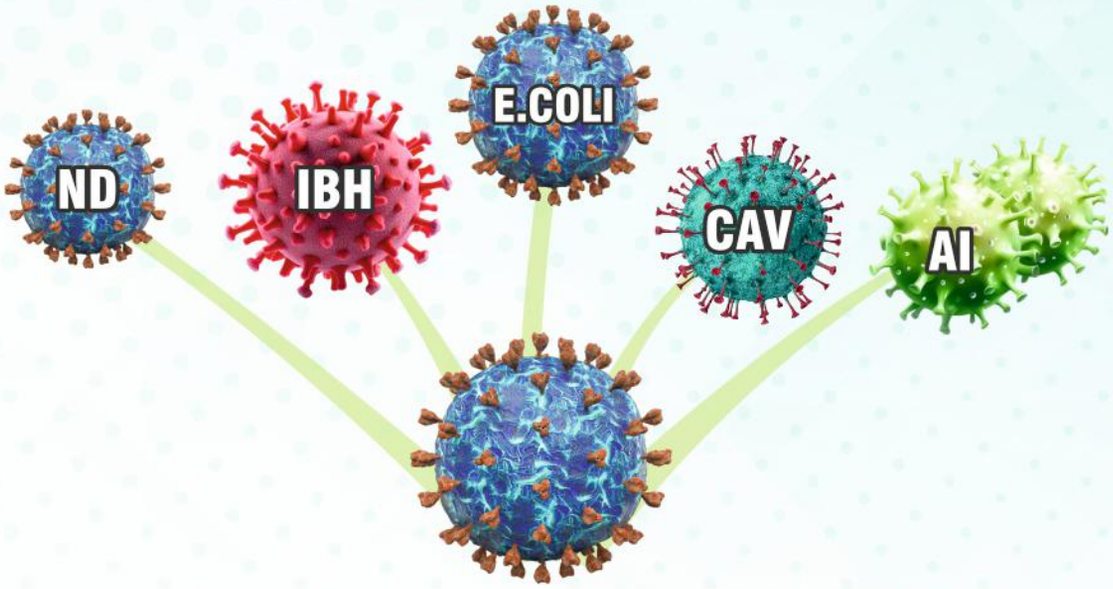
Maxi-Nutrio

Yeast Bioactive Technology



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- Salmonella Control
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- Improve chick quality & immune response
- GIT Development
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- Macrophage Activator

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Contact: +91 98769 27764, +91-172-5010764 | Mail: info@canafa.in | Website: www.canafa.in

Fowl Cholera

Dr. H.K. Rohila
Poultry Consultant, Ex-Technical Head,
Broiler Breeder, VH-Group, North India
Mobile: 8195940099
Email: drrohilla1947@gmail.com
Contact for free Telephone Consultancy
Morning 8 to 10 am

Also Known As

- Avian Cholera
- Avian Pasteurellosis
- Avian Hemorrhagic Septicemia

Fowl Cholera is a Bacterial Disease Caused by Pasteurella Multocida, A Small Gram Negative Rod





Fowl cholera





Most Important Sources of Infection

- Chronically Infected Birds
- Asymptomatic Carriers
  - Birds
  - Rats
  - Older Flocks

Nb : Incubation Period 5 To 8 Days

More Prevalence In :

Late Summer (June to September)

Fall (September, October, November & Winter (December, January & February)

Because of Suboptimal Climatic Conditions in Poultry Houses

Nb : No Vertical Transmission

No Hatchery Problem

Cases Are Seen When

- Sudden Change of Feed
- Withdrawal of Feed & Wate
- Any Abrupt Change in Microenvironment

Forms of Disease

- Peracute Form
- Acute Form
- Chronic Form
- Localised Form

NB : Laying Flocks More Susceptible to Fowl Cholera.

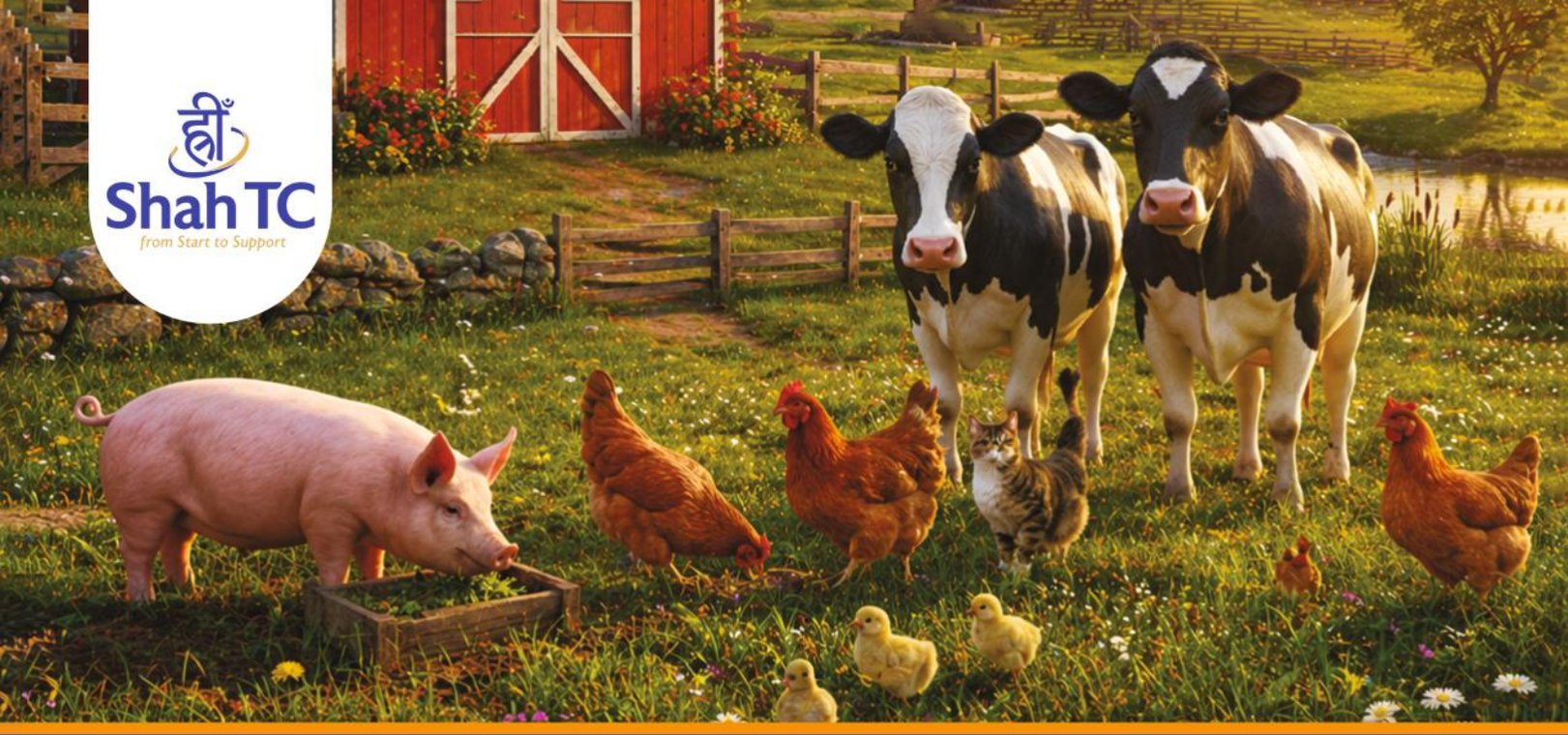
Per Acute Form

- No Symptoms & A Large Number Of Birds In The Flock Are Found Dead In Good Bodily Condition,50% Or More Birds May Die.
- Birds Between 12 to 18 Weeks ,more Susceptible to the Disease.

Acute Form

- Depression
- Fever
- Loss of Appetite
- Mucus Discharge
- Comb & Wattles, Bluish Discolouration
- Foul Smelling Diarrhoea First Watery & Whitish , then Greenish with Mucus

Shah TC
from Start to Support



NOSIHEPTIDE 1% | ENRAMYCIN 8%

About the Manufacturer

SHANGHAI MOXI

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from Start to Support

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Chronic Form

- Depression
- Difficult Breathing
- Lameness
- Torticollis (Twisting of Neck)
- Swelling of the Wattles
- Lacrimation

NB : Chronically Infected Birds May Die, remain Infected for Long Periods or Recover.

Localised Form

- Arthritis
- Oophoritis

PM Findings

- Marked Congestion of Carcass
- Numerous Pinpoint Haemorrhages throughout the Internal Organs.
- Necrotic Foci in the Liver
- Liver May be Enlarged /show Small Haemorrhages on the Surface
- Free Yolk May be Seen in the Abdominal Cavity.
- Acute Oophoritis & Hypermic Ovarian Follicles
- Peritoneal & Pericardial Fluid

Bacterial Isolation

- Bone Marrow
- Heart Blood
- Liver

Diagnosis of Fowl Cholera

1. Bacterial Isolation
2. Bipolar Staining
3. PCR Through FTA Cards

Line Of Treatment

- Sulpha Drugs, Bacteriostatics
- Terramycin LA
- Streptomycin

NB : Treatment Should be on the Basis of Bacterial Isolation & Antibiotics Sensitivity Test.

Control of Fowl Cholera

- Monthly Rat Control Programme
- Sick Birds Isolation
- Proper Vaccinations

  VH-FC 3 at 8 WK &12 WK XI/M x Legs

Differential Diagnosis

- Viral Infections
  - New Castle / Ranikhet Disease
    - Button Ulcers In Intestine
    - Pin-point Hemorrhages on Proventricular Glands
    - Linear Haemorrhages in trachea
    - Linear Rectal Haemorrhages

Low Pathogenic Influenza (LPI)

Haemorrhagic Trachitis

Pin Point Haemorrhages on Deep & Superficial Pectoral Muscles

Haemorrages On Internal Visceral Organs

Egg Peritonitis, Flacid Ova Etc

LPI

ND/RD IB

Zivota introduces the complete range of anti-coccidials from the best International Sources.

Zivota is backed by decades of experience and expertise in the field of coccidiosis prevention.

MaduraZiv 10
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ZivoCox 120
(Salinomycin Sodium 12%)

Zivensin 200
(Monensin Sodium 20%)

Zivodine 100
(Robenidine HCL 10%)

ZivoClop 250
(Clopidol 25%)

Zivuril 5
(Diclazuril 0.5%)

DecoZiv 60
(Decoquinate 6%)

ZivoCarb 250
(Nicarbazin 25%)

Manager (Sales) - Punjab, Haryana & Rajasthan

Manager (Sales) - Uttar Pradesh & Bihar

zivota

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+91-172-4568728
contactus@thezivota.com

When the Heat Rises, Your Flock Suffers.

How summer heat stress silently devastates poultry productivity — and why natural Vitamin C from Vam-C Liquid is the farmer's most powerful defence.

Vamso

Every summer, millions of poultry farmers across India watch helplessly as soaring temperatures — often exceeding 42°C — silently drain the life out of their flocks. Egg production drops. Feed conversion deteriorates. Hatchability falls. And in severe cases, mortality spikes. What most farmers don't realise is that this devastation isn't inevitable. Heat stress in poultry is manageable — if you have the right weapon.

That weapon is Vam-C® Liquid — a scientifically formulated, natural Vitamin C supplement from Amla extract, fortified with electrolytes, minerals, selenium, and ashwagandha, designed to fight heat stress from multiple angles simultaneously.

⚠ Critical Threshold

Poultry experience heat stress when temperatures exceed 25°C for extended periods. At 35°C+, thermal panting increases, feed intake drops sharply, and oxidative damage to cells begins — causing cascading production losses and immune compromise.

The Silent Summer Crisis in Your Poultry Shed

Poultry birds — whether broilers, layers, or breeders — are uniquely vulnerable to heat. Unlike mammals, they lack sweat glands and rely entirely on panting to dissipate body heat. This respiratory effort disrupts blood pH, depletes electrolytes, and generates massive quantities of harmful free radicals through a process called oxidative stress.

The downstream consequences are severe. Under intense heat, the bird's body begins redirecting resources away from production and toward mere survival. The immune system weakens. The gut lining becomes porous, inviting pathogen invasion. Calcium metabolism is disrupted, causing shells to thin and fertility to plummet.

At the cellular level, free radicals — the toxic byproducts of metabolic overdrive — attack membranes, proteins, and DNA. Without powerful antioxidants to neutralise them, every hour of heat exposure compounds this invisible damage.

"Summer heat doesn't just make birds uncomfortable. It systematically dismantles the biochemical machinery that drives feed conversion, egg production, immunity, and hatchability — often before a farmer notices anything is wrong."

What the bird urgently needs during heat stress is a rapid, multi-target intervention: antioxidant power to quench free radicals, electrolytes to restore osmotic balance, energy to sustain cellular function, and adaptogenic support to blunt the hormonal stress cascade. Vam-C Liquid delivers all four.

Inside Vam-C: Nature's Most Complete Stress Formula

Unlike single-ingredient synthetic supplements, Vam-C Liquid is a synergistic blend of six active component categories, each playing a distinct and complementary role in protecting birds from summer stress.

COMPLETE ACTIVE INGREDIENT PROFILES (PER 100 ML)

Ingredient	Quantity / Standardisation	Function in Heat Stress Management
Natural Vitamin C (Amla Extract)	15,000 mg/100ml	Standardised to 25% ascorbic acid & 13% total phenolics. Neutralises free radicals, enhances collagen synthesis, stimulates immune leukocyte activity. 5.8× higher ORAC vs synthetic ascorbic acid.
Dextrose	10,000 mg/100ml	Immediate glucose energy during heat stress when feed intake drops. Facilitates rapid electrolyte absorption via sodium-glucose cotransport mechanism in the intestine.
Electrolytes (Na+, K+, Cl-)	Na+ 390mg, K+ 500mg, Cl- 1,100mg	Restores osmotic balance and acid-base equilibrium lost through panting. Prevents dehydration and maintains physiological homeostasis.
Minerals (Ca2+, Mg2+, S2-)	Ca 100mg, Mg 200mg, S 250mg	Calcium and Magnesium support eggshell formation, neuromuscular function and enzymatic activity. Sulphur contributes to amino acid metabolism (methionine, cysteine).
Ashwagandha Extract	Standardised 2.5% withanolides	Modulates the hormonal stress cascade, blunting corticosteroid response that suppresses immunity and reproductive performance under chronic heat.
Selenium (Sodium Selenite)	0.3 ppm	Co-antioxidant activating glutathione peroxidase —the body's endogenous free-radical defence enzyme. Works synergistically with Vitamin C.
Synergistic Polyphenols	From Amla extract	Emblicanin A/B, gallic acid and ellagic acid regenerate oxidised Vitamin C back to active form, creating a self-renewing antioxidant cycle unique to natural Amla.

Why Natural Amla Vitamin C Outperforms Synthetic Ascorbic Acid

The supplement market is flooded with synthetic ascorbic acid products. Many farmers choose them because they appear cost-effective per gram.

Parameter	Synthetic Ascorbic Acid	Vam-C (Natural Amla)
Antioxidant Power (ORAC)	Baseline reference	5.8× higher
Plasma Ascorbate Level	Standard absorption	1.4× higher at equal mg dose
Peak Plasma Concentration	Variable	Consistent — 2 hrs post-admin
Clearance Rate	Rapid	Slower — better retention
Polyphenol Co-factors	Absent	Present (Emblicanins, Gallic acid)
Vitamin C Regeneration	One-time use	Polyphenols re-activate oxidised Vit C
Electrolyte Support	None	Full spectrum included
Adaptogenic Support	None	Ashwagandha (2.5% withanolides)
Selenium Co-antioxidant	None	0.3 ppm Sodium Selenite
Shelf Life	Variable	36 months at 30°C / 65% RH
Heat Stability (pelleting)	Degrades significantly	>95% activity retained at 80–85°C
Dilution Stability	Variable	Stable 24 hrs in drinking water


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Electrolytes
Selenium
Se
Selenium
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33

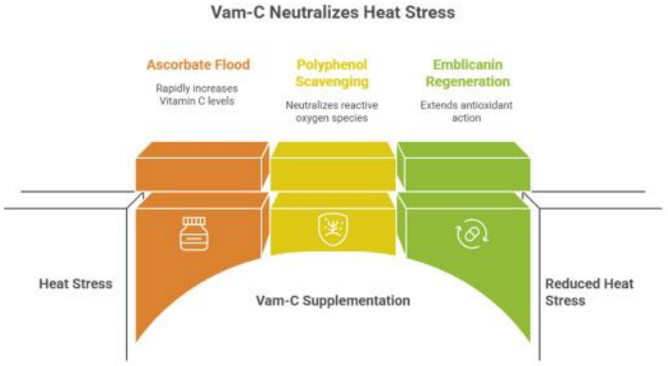
But head-to-head evidence tells a decisively different story.

The conclusion is unambiguous. Gram-for-gram, Vam-C's natural Amla Vitamin C delivers superior plasma concentration, superior antioxidant duration, and a unique self-regenerating activity cycle — none of which synthetic ascorbic acid can replicate.

How Vam-C Fights Heat Stress: The Full Mechanism

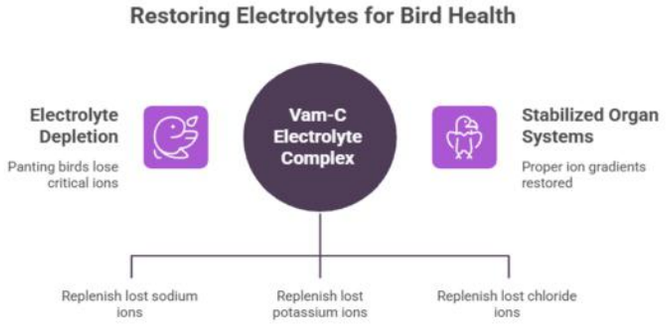
1. Rapid Free Radical Neutralisation

Within hours of a heat challenge, Vam-C's 15,000 mg of natural Amla Vitamin C floods the bloodstream with ascorbate and co-polyphenols. These molecules directly scavenge reactive oxygen species (ROS) — the free radicals that damage cell membranes, mitochondria, and DNA. Crucially, Emblicanin A and B from Amla can regenerate oxidised Vitamin C back into active form, creating an extended antioxidant action that synthetic supplements simply cannot match.



2. Electrolyte Restoration and Hydration

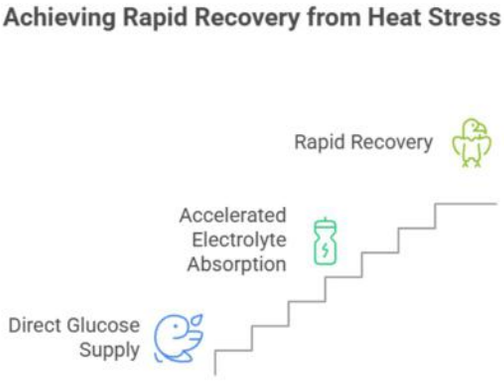
Panting birds lose sodium, potassium, and chloride at alarming rates. This electrolyte depletion disrupts cell osmotic pressure, muscle function, and blood pH — causing weakness, poor absorption, and in extreme cases, collapse. Vam-C's comprehensive electrolyte complex immediately restores these critical ions, stabilising every organ system



that depends on proper ion gradients.

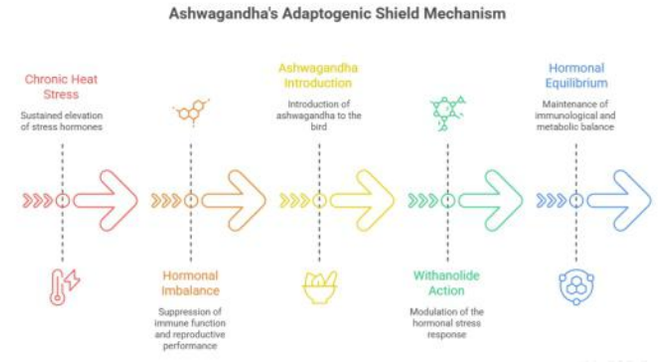
3. Dextrose-Powered Rapid Recovery

Heat-stressed birds reduce feed intake, cutting off the bird's primary energy supply precisely when energy demand is highest. Dextrose in Vam-C provides direct, immediate glucose — and through the sodium-glucose co-transport mechanism in the gut, simultaneously accelerates the absorption of all accompanying electrolytes.



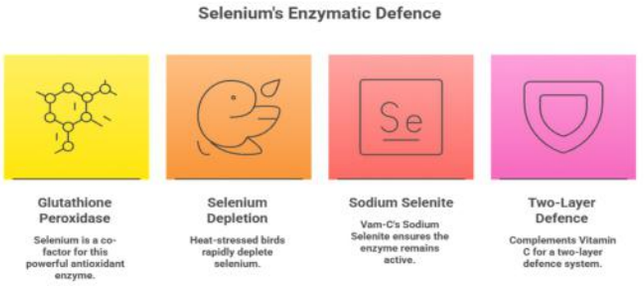
4. Ashwagandha's Adaptogenic Shield

Chronic heat stress triggers a sustained elevation of stress hormones (corticosteroids) that suppress immune function, impair reproductive performance, and reduce feed efficiency. Ashwagandha's withanolides modulate this hormonal stress response, helping the bird maintain immunological and metabolic equilibrium even when environmental temperatures remain elevated for days or weeks.



5. Selenium's Enzymatic Defence

Selenium is an essential co-factor for glutathione peroxidase — one of the bird's most powerful endogenous antioxidant enzymes. Heat-stressed birds rapidly deplete selenium. Vam-C's 0.3 ppm Sodium Selenite ensures this critical enzyme remains active, complementing the exogenous antioxidant action of Vitamin C for a two-layer defence system.



Recommended Dosage Protocol — Summer Heat Management

Exceptional Stability — No Compromise on the Farm

Vam-C's 36-month shelf life at 30°C/65% RH (with accelerated stability confirmed up to 12 months at 40°C/75% RH) makes it ideal for farm storage in India's warm climate — no cold chain required.

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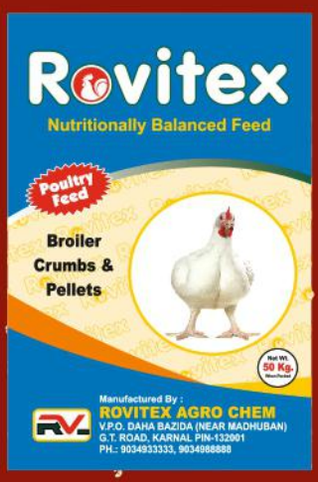
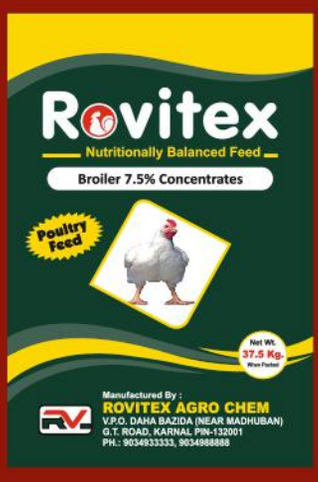
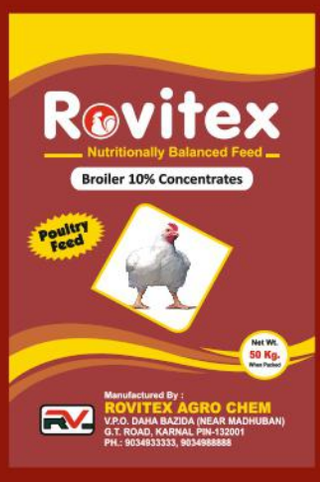
- ❖ Broiler 7.5% Concentrates
- ❖ Broiler 5.5% Concentrates
- ❖ Broiler 3.5% Concentrates
- ❖ Broiler 2.5% Concentrates
- ❖ Broiler 1.5% Concentrates

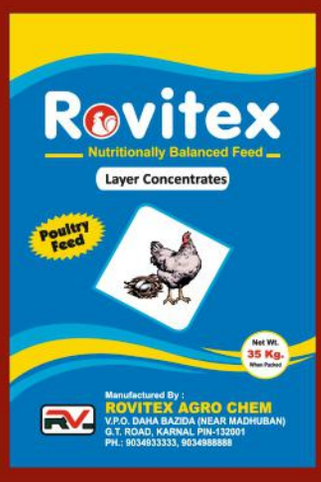
Layer Concentrates:
- ❖ Layer 5% Concentrates
- ❖ Layer 10% Concentrates
- ❖ Layer 25% Concentrates
- ❖ Layer 35% Concentrates

Broiler Crumbs/Pellets:
- ❖ Broiler Pre-Starter Crumbs
- ❖ Broiler Starter Crumbs
- ❖ Broiler Finisher Pellets









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Most critically, Vam-C retains more than 95% of its Vitamin C activity after pelleting at 80-85°C — a critical advantage for farmers who mix supplements into mash feed that undergoes heat processing.

Whether dosed through drinking water, mixed into feed, or administered during emergency interventions, the active ingredients in Vam-C remain fully potent and available.

Condition	Dose	Notes
Normal Prevention	1 ml/L water	Use daily during entire summer season to maintain antioxidant reserves and electrolyte balance.
Heat Stress / Dehydration	2 ml/L water (safe up to 3 ml/L)	Use immediately when temperatures exceed 35°C, during transport, or when birds show panting signs.
Day-Old Chicks	0.5 ml/L water + electrolyte mix	Provides critical early-life antioxidant and immune support during the most vulnerable developmental window.
Pre/Post Stress Events	Stress dose 24–48 hrs before & after	Administer before and after vaccination, transport, or heatwave periods for maximum protective resilience.
Water Management	Replace fortified water daily	Vam-C is stable in water for 24 hours at room temperature. Fresh daily preparation ensures maximum potency.

Why Vam-C is the Smart Choice for Summer Poultry Management

Summer is not just a season — for poultry farmers, it is the most economically dangerous period of the year. The compounded effect of heat stress on FCR, egg production, mortality, and hatchability can erase months of careful farming in weeks.

Vam-C Liquid stands apart from ordinary Vitamin C supplements because it is built on a systems-level understanding of what birds actually need when temperatures rise. Natural Amla Vitamin C with its polyphenol regeneration cycle. Dextrose for energy and electrolyte absorption. A full electrolyte complex for osmotic balance. Ashwagandha for hormonal stress modulation. Selenium for enzymatic antioxidant support. No other product delivers all six functional benefits in a single, stable, proven formula.

Manufactured by Vamso Biotec Pvt. Ltd., an ISO 9001:2015, GMP, and FAMI-QS certified company with over five decades of commitment to natural animal health, Vam-C represents the gold standard in summer poultry supplementation.

"The cost of supplementation with Vam-C during summer is a fraction of the economic damage from even one week of unchecked heat stress. Protecting your flock this summer isn't just good animal husbandry — it's smart business."

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ARTICLE

The Role of Drinking Water Quality in Producing Safe and Healthy Eggs and Chicken

Prof. (Dr.) P.K. Shukla and Dr. Amitav Bhattacharyya

Abstract

Water is a vital but often underappreciated nutrient in poultry production. It plays essential physiological, biochemical, and environmental roles that influence birds' health, productivity, and the safety of poultry-derived products such as eggs and meat. Poor water quality—whether due to microbial, chemical, or physical contamination—poses a significant threat to broiler and layer performance, reduces the efficacy of vaccines and antibiotics, and increases the risk of zoonotic pathogen transmission. This article discusses the multifaceted influence of drinking water quality on poultry health and product safety. It reviews key physicochemical and microbiological parameters affecting poultry water, analyses their impacts on bird physiology, productivity, and product quality, and presents technological and management strategies for maintaining optimal water standards. By drawing upon recent research and international guidelines, the paper highlights that water quality management is not merely a supportive practice but a critical pillar of biosecurity and sustainable poultry production.

1. Introduction

Water is an indispensable nutrient for all animals, including poultry. It accounts for 55–75% of live body weight in chicken and up to 65% of the content of an egg. Every metabolic event in poultry—ranging from digestion and nutrient transport to thermoregulation and excretion—depends on an ample supply of clean, safe water. Despite this central role, drinking water quality has historically received less attention than feed formulation or vaccination programs in poultry farm management.

The increasing global demand for poultry meat and eggs has led to the intensification of production systems, which in turn heightens the sensitivity of flocks to subtle changes in health and environmental quality. In modern broiler and layer operations, water serves not only as a nutrient but also as a vehicle for vaccines, medications, and feed supplements, emphasizing that water quality directly influences animal welfare, productivity, and the public health dimension of poultry production.

This article aims to critically examine the role of drinking water quality in producing safe and healthy poultry products. It draws attention to the relationship between water quality parameters, flock health, microbiological safety, and the ultimate nutritional and hygienic value of poultry produce. The discussion integrates recent scientific findings and advances in water treatment technologies, underlining the necessity of comprehensive water quality management for sustainable poultry production.

2. The Physiological Importance of Water in Poultry

Water is involved in every physiological process of poultry:

- **Temperature regulation:** Through evaporation (panting), water helps dissipate body heat. Water intake increases two- to threefold during heat stress conditions.
- **Digestion and nutrient absorption:** Water acts as a solvent and transport medium for feed nutrients and facilitates enzymatic reactions.
- **Metabolic processes:** It is central to oxidation-reduction reactions, hydrolysis, and transportation of hormones and waste.
- **Reproduction:** Adequate hydration is necessary for egg formation, considering that nearly two-thirds of egg weight is water.
- **Waste elimination:** Excretion of uric acid and other nitrogenous compounds depends on water flow through the kidneys.

Thus, even moderate deviations in water quality, temperature, or palatability can lead to reduced feed intake, slower growth, poor eggshell quality, and increased mortality. Water's quality and quantity together set the physical limits of poultry performance.

3. Sources of Drinking Water in Poultry Farms

Drinking water for poultry typically originates from groundwater, surface water, or municipal supplies. Each source has distinct qualities and vulnerabilities.

- **Groundwater:** Traditionally considered safe due to its filtration through soil layers. However, contamination by nitrates, heavy metals, or leachates from agricultural runoff can degrade its safety.
- **Surface water (ponds, rivers):** Highly susceptible to microbial contamination and agricultural effluents.
- **Rainwater collection:** Used in small-scale farms but requires treatment and storage control to prevent microbial growth.
- **Municipal water:** Usually treated and relatively safe but may contain residual chlorine or other additives requiring pH adjustment.

Given that poultry water systems are closed-loop environments, contamination not only from the source but also within storage and distribution systems (pipes, tanks, nipples) can significantly worsen water quality.

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4. Key Water Quality Parameters Affecting Poultry Health

4.1 Physical Parameters

Temperature: Optimal drinking water temperature for poultry is between 18°C and 21°C. Water above 29°C reduces intake and increases body heat load, while extremely cool water may cause chilling and intestinal stress.

Colour, taste, and Odor: Water should be clear, colourless, tasteless, and Odor-free. Discoloration indicates mineral or organic contamination, potentially reducing consumption.

4.2 Chemical Parameters

pH

The acceptable **pH range** for poultry drinking water is 6.0–8.0, though slightly acidic water (6.5–7.0) is preferred.

- **Low pH (<5.0):** Can corrode metal pipelines, impair palatability, and interfere with medication.
- High pH (>8.0): Indicates alkalinity, which supports bacterial growth and reduces disinfectant efficiency.

Total Dissolved Solids (TDS)

TDS represents the concentration of inorganic salts such as calcium, magnesium, and sodium.

- <1,000 mg/L: Excellent quality
- 1,000–3,000 mg/L: Satisfactory for adult poultry
- >3,000 mg/L: May cause diarrhoea, wet litter, or mortality

Hardness

Hardness, due to calcium and magnesium salts, causes scale formation in pipelines and can interfere with proper medication dosing. While not directly toxic, hardness above 180 ppm decreases water flow efficiency.

Nitrates and Nitrites

Sources include agricultural runoff and faecal contamination. High nitrate levels (>25 ppm) interfere with oxygen transport (methemoglobinemia), reduce feed efficiency, and increase chick mortality.

Heavy Metals

Trace contamination by lead, arsenic, cadmium, or mercury can bioaccumulate in tissues, reducing egg quality and posing food safety hazards.

Sodium and Chloride

Excess sodium (>150 ppm) and chloride (>250 ppm) contribute to wet droppings and decreased performance, particularly in layers,

4.3 Microbiological Parameters

Microbial water contamination, especially by coliforms, E. coli, and Salmonella, is among the most serious threats to poultry health:

- **Coliforms:** Indicators of faecal pollution. Acceptable concentration is <50 CFU/mL
- **E. coli:** Frequently linked to diarrhoea, septicaemia, and reduced growth.
- **Pseudomonas spp.:** Forms biofilms in watering lines, reducing sanitizer effectiveness.
- **Salmonella and Campylobacter:** Zoonotic pathogens with public health implications.

In a Libyan study, 91% of poultry water samples exceeded the acceptable coliform levels, and 50% contained E. coli, highlighting the ubiquity of microbial contamination even in controlled environments.

5. Effects of Poor Water Quality on Poultry Performance

5.1 Growth and Feed Conversion

Water quality significantly influences feed intake and conversion ratio (FCR). Contaminated or saline water reduces voluntary intake, resulting in slower weight gain and poor feed efficiency. Studies have shown that TDS levels above 3,000 mg/L increase mortality and diarrhoea among broilers.

5.2 Immunity and Disease Resistance

Contaminated water serves as a vector for enteric diseases such as colibacillosis, salmonellosis, and necrotic enteritis. Additionally, high mineral or pH levels can inhibit vaccine and antibiotic efficacy when delivered through drinking water systems. Saleh et al. (2023) emphasized that poor water quality compromises vaccine performance and contributes to antibiotic resistance in poultry.

5.3 Reproduction and Egg Quality

For layers and breeders, water quality directly affects reproductive performance and egg traits:

- High sodium or chloride causes thin shells and reduced hatchability.
- Low pH or high nitrates interfere with calcium metabolism, leading to shell defects.
- Heavy metals and pesticide residues can bioaccumulate, threatening egg safety for human consumption.

5.4 Digestive and Nutrient Absorption Problems

Excessive sulfates and magnesium cause laxative effects, while iron and manganese lead to biofilm formation and interfere with absorption of other minerals. Acidic or alkaline imbalances alter gut microflora, reducing nutrient digestion and increasing pathogenic bacterial colonization.

6. Water as a Vector for Medication and Vaccine Delivery

Drinking water serves as a means of drug and vaccine administration in poultry due to its convenience and cost efficiency. However, its effectiveness depends on the stability of compounds within specific water chemistries.

- **Chlorinated water** can oxidize or inactivate live vaccine strains (e.g., Newcastle or Gumboro vaccines).
- **Hard water** binds certain antibiotics such as tetracyclines, reducing bioavailability.

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- **High pH water** destabilizes acid-sensitive medications.

Therefore, understanding water chemistry is vital before preparing vaccine or medication solutions. Dechlorination and pH correction should precede water-based treatments to ensure desired pharmaceutical efficacy.

7. Water Quality, Food Safety, and Public Health

Poultry products are major components of global protein supply chains. Ensuring the microbiological and chemical safety of eggs and meat requires control over primary inputs—most importantly, water.

7.1 Pathogen Transfer to Humans

Contaminated water contributes to the persistence of zoonotic bacteria in poultry environments. Salmonella and Campylobacter, often transmitted via fecally-contaminated water, can colonize flocks asymptomatically and contaminate meat or eggs during processing.

7.2 Residues and Toxic Elements

Metals such as lead and arsenic, present in contaminated groundwater, accumulate in egg yolk and muscle tissues. Chronic exposure to these residues elevates human health risks. Monitoring nitrate and heavy metal levels in poultry water sources is therefore part of integrated food safety systems.

7.3 Cross-Resistance and Antimicrobial Stewardship

Frequent use of subtherapeutic antibiotics in contaminated water fosters antimicrobial resistance (AMR), which has both veterinary and human health consequences. Clean, pathogen-free water helps reduce reliance on antibiotics and promotes the transition toward antimicrobial-free poultry systems.

8. Ideal Water Quality Standards for Poultry

Parameter	Recommended Range	Effect on Birds (Outside Range)
pH	6.0 - 8.0	Corrosion, microbial growth, poor vaccine efficacy
TDS (mg/L)	<1,000	Decreased growth, diarrhea
Hardness (ppm)	60 - 180	Scaling and poor sanitation
Sodium (ppm)	<150	Wet litter, reduced efficiency
Chloride (ppm)	<250	Off - flavor in water, droppings
Nitrate (ppm)	<25	Poor egg shell quality, toxicity
Iron (ppm)	<0.3	Bacterial growth, biofilms
Coliform count	0 - 50 CFU/mL	Disease transmission, infection

These values are derived from poultry water quality research and standards provided by Koelkebeck (University of Illinois)

9. Monitoring and Testing of Water Quality

Routine testing is the foundation of water quality assurance. Because physical appearance is unreliable, laboratory testing is essential. Common diagnostic parameters include:

- **Physicochemical:** pH, hardness, alkalinity, TDS, nitrate/nitrite, salts
- **Microbiological:** Total bacterial count, coliforms, E. coli, and pathogens

Testing should be done:

- At least twice a year for all major parameters
- Monthly for microbial load, especially in hot and humid environments
- At multiple points: the source, water tank, and drinking line outlets

On-farm rapid test kits for pH and chlorine can provide real-time data, but laboratory analysis offers the accuracy needed for corrective action.

10. Water Treatment and Sanitation Techniques

Effective water sanitation requires a combination of physical, chemical, and management approaches. Modern poultry operations employ integrated water treatment systems tailored to the type of contamination.

10.1 Filtration

Removes suspended solids and organic matter that shelter microorganisms. Multi-stage filtration using screens, sand filters, and activated carbon is recommended before chemical disinfection.

10.2 Chlorination

The most widely used method. Residual chlorine between 2-5 ppm ensures ongoing antimicrobial action. However, chlorine reacts with organic material forming trihalomethanes, so monitoring is essential. Bleaching powder or sodium hypochlorite solutions are economical, though they must be carefully dosed.

10.3 Hydrogen Peroxide

At 1 mL per 50 L, 50% hydrogen peroxide is a low-cost, short-contact-time sanitizer. It decomposes into water and oxygen, leaving no residues, making it suitable for continuous use.

10.4 Ozone and UV Radiation

Both oxidize and destroy microbial DNA without leaving residues. These systems are effective but capital-intensive and more common in commercial-scale facilities.

10.5 Organic Acidification

Adding citric, acetic, or formic acid improves palatability, lowers pH, and inhibits pathogenic growth. Acidified water enhances digestion and intestinal health, especially in antibiotic-free systems.

10.6 Ion Exchange and Reverse Osmosis

Employed for high-salinity or nitrate-contaminated water. While reverse osmosis provides the most complete purification, it is costly and requires energy-intensive maintenance.

10.7 Biofilm Control and Line Flushing

Monthly flushing and disinfection of tanks and pipelines prevent biofilm accumulation. Periodic rotation of sanitizers (chlorine, peroxide, iodine) avoids microbial resistance.

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11. Advances in Sustainable and Precision Water Management

Recent research emphasizes precision poultry farming (PPF) techniques for real-time water quality monitoring. Smart sensors can detect variations in temperature, pH, ORP (oxidation-reduction potential), and flow rate, triggering automated corrective measures.

Additionally:

- Electrolyzed oxidative water and magnetized water have been explored for their disinfecting and growth-enhancing properties.
- Circular water systems that recycle and safely treat wastewater minimize environmental footprint.
- Natural antimicrobial combinations (e.g., essential oils and organic acids) provide eco-friendly alternatives to antibiotic-laden systems.

These advancements align with the goals of sustainability and antimicrobial stewardship in the global poultry industry.

12. Integrated Water Quality Management for Poultry Farms

An effective water management plan integrates four pillars:

1. Source Protection: Prevent contamination through proper well construction, drainage, and exclusion of wild animals.

2. Water Line Sanitation: Conduct scheduled cleaning between production cycles and maintain shaded or buried water lines to prevent heating.

3. Regular Testing: Establish a data-driven system with thresholds and response actions.

4. Record Keeping: Maintain logs of treatments, test results, and corrective actions for traceability and certification programs such as HACCP and ISO 22000.

13. Relationship Between Water Quality and Economic Returns

While water testing and treatment entail costs, their benefits substantially outweigh expenditures. Poor water quality results in higher medication expenses, slower growth rates, reduced egg yield, and increased mortality. Improved water quality has been linked to:

- **5-10% better feed conversion ratios**
- **5% higher egg production rate**
- **Reduced culling and mortality rates by 3-7%**
- **Improved uniformity and carcass yields**

Ultimately, clean water enhances profitability and supports consumer trust in food safety.

14. Policy, Regulation, and Training

Ensuring high water quality standards in poultry production also requires institutional support:

- National food-safety authorities should enforce guidelines on livestock drinking water quality.
- Capacity-building programs for farmers must emphasize on-farm testing, waterline maintenance, and correct sanitizer use.
- Certification schemes like Global G.A.P. can include water quality monitoring as a key criterion for export compliance.

Such coordinated policy efforts translate biosecurity principles into measurable public health outcomes.

15. Discussion: Linking Water Quality to the "One Health" Framework

The global "One Health" approach recognizes that animal, human, and environmental health are interdependent. In this context, poultry water quality is not merely an agricultural issue—it is a public health priority.

- **Animal health:** Clean water reduces disease susceptibility and antibiotic dependence.
- **Human health:** Prevents foodborne disease transmission via poultry products.
- **Environmental health:** Proper water management minimizes contamination and eutrophication from effluents.

Thus, sustainable water stewardship embodies the One Health philosophy, promoting resilience across poultry production systems and public health networks.

16. Summary

Drinking water quality represents a decisive factor in the production of safe and healthy poultry eggs and meat. It influences physiological functioning, reproductive performance, vaccine and antibiotic efficacy, and final product safety. The interconnections between water contamination, pathogen load, and residue accumulation are critical to both farm productivity and human health.

Regular monitoring of physical, chemical, and microbiological parameters; adoption of appropriate water treatment methods; and integration of advanced monitoring technologies collectively define a robust water quality management system. In the competitive and sustainability-focused poultry industry of the 21st century, **water quality is not optional—it is strategic.**

By prioritizing clean water as a nutritional and biosecurity resource, poultry producers can ensure profitable growth, protect consumer health, and contribute to broader ecological and food security goals.

Prof. (Dr.) P.K. Shukla and Dr. Amitav Bhattacharyya

Department of Poultry Science,

College of Veterinary Science and Animal Husbandry, Mathura- 281001 (U.P.)

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  To be used with soya and maize with inclusion rate 75 Kg/Ton of complete feed.
- **Nutrena 5% Pre-Starter / Starter / Finisher Concentrates**
  To be used with soya, maize and oil with inclusion rate 50 kg / Ton of complete feed.
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  To be used with soya, maize and oil with inclusion rate 35 kg / Ton of complete feed.
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Petersime launches UniStreamer™: intelligent incubators engineered for chick uniformity and full traceability

Petersime proudly announces the launch of UniStreamer™, its next-generation range of single- stage incubators. Designed to meet the poultry industry's rising demand for product consistency, transparency and performance, UniStreamer™ combines unmatched chick uniformity with end-to-end traceability in one intelligent, future-ready solution.

Retailers are raising the bar: they demand consistent volumes, perfectly sized fillets and table eggs that meet ever-stricter quality criteria. At the same time, pressure is mounting for full transparency on product origin and processing. As a world leader in incubation, Petersime has responded with a new generation of intelligent single-stage incubators - UniStreamer™ - engineered to meet today's market demands with confidence.

What truly sets UniStreamer™ apart is its breakthrough in chick uniformity. Designed to deliver maximum uniformity in day-old chicks, Petersime's new incubator lays the foundation for optimal, uniform flock growth in later life. Powered by nature-inspired technologies like HatchSound™ and HatchScan™, UniStreamer™ delivers tighter hatch windows and stronger hatch and post-hatch performance. These innovations are the latest evolution of Petersime's Embryo-Response Incubation™, a proven approach to automatically adapt the incubation environment to the needs of each specific batch of eggs - now taken to its highest level yet.

UniStreamer™ also introduces a new benchmark in traceability. Using unique trolley identification and Eagle Trax™ cloud software, hatcheries can keep record of every trolley's journey throughout the entire process, providing full transparency of internal operations while uncovering opportunities to boost performance. Even the farm storage and transport trucks can be included. The result: a complete, digital overview of egg and chick movement improving biosecurity, enabling data-driven performance optimization and ensuring full audit-readiness.

"At Petersime, innovation isn't about adding features for the sake of it - it's about delivering measurable results for our customers," says Rudy Verhelst, Business Development Manager at Petersime. "With UniStreamer™, hatcheries can count on consistently high chick uniformity and full traceability across their operations. A predictable output of uniform, high-quality chicks is only possible when nothing is left to chance. By monitoring every step - from breeder farm to grow-out farm – hatcheries gain the clarity and control to maximize results. And that pays off across the value chain with more uniform growth on the farm, smoother processing and a more profitable, efficient and transparent production process overall."

UniStreamer™ is available in multiple configurations, including UniStreamer™ HD, which offers a 12% higher egg capacity per incubator without compromising performance. Complementary systems such as Re-Store and Chick-Store, also part of the UniStreamer™ family, ensure optimal conditions before and after hatching. From egg reception to chick storage, the entire 'ecosystem' is designed to deliver consistent, high-performance results.

With this launch, Petersime once again redefines the standard for single-stage incubation. Hatcheries looking to meet tomorrow's demands in productivity, performance, traceability and predictable output now have a powerful, proven solution in UniStreamer™.

With UniStreamer™, Petersime introduces a new generation of single-stage incubators that combine maximum chick uniformity with full traceability, laying the foundation for more consistent flock performance and greater overall transparency and efficiency across the poultry value chain.

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THE CONNECTION BETWEEN PROTEIN & A HAPPY HEALTHY LIFESTYLE

We all experience mood dips, from mid-afternoon slumps to that restless, foggy feeling after a poor night's sleep. But what if the answer to better emotional balance isn't in your coffee cup or social feed, but your protein diet?

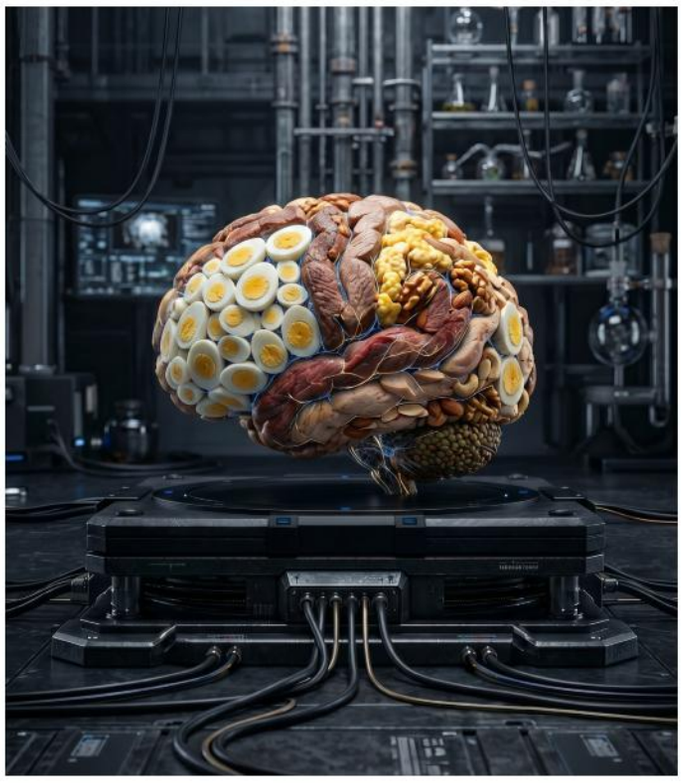
More than just fuel, food directly influences your brain chemistry. And when it comes to stabilising mood, protein plays a leading role. From boosting "happy hormones" like serotonin and dopamine to helping you feel fuller and calmer, high-quality protein can make a real difference.

The Protein Connection: How Amino Acids Lift Your Mood

Proteins are made up of amino acids, some of which are essential building blocks for brain chemicals that regulate your mood:

Tryptophan is a precursor to serotonin, the neurotransmitter responsible for feelings of wellbeing and emotional calm.

Tyrosine helps produce dopamine and norepinephrine, which are tied to motivation, focus, and alertness.



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Boost Your Mood with Better Nutrition. Proper Nutrition Brings Happiness.

Fuel Your Ambition. What we Live By.

The World Happiest Country rankings and their Daily Protein Consumption

Sr. No	Countries	Happiness Score	Daily Protein Consumption per capita
01	Finland	7.7	123 g
02	Iceland	7.5	151 g
03	Denmark	7.5	113 g
04	Costa Rica	7.4	75 g
05	Sweden	7.3	70 g

Emotional well-being is a fundamental pillar of our overall health, directly affecting our quality of life, daily choices, and eating habits. Often, our psychological state influences the way we eat, while at the same time, our diet has the power to shape our mood.

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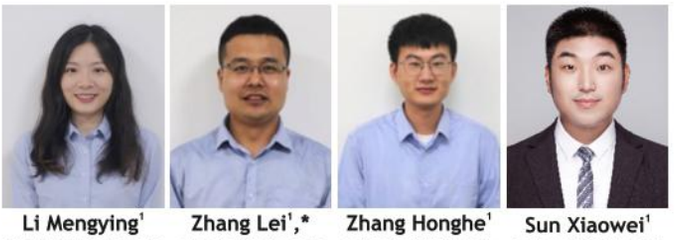

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1 Introduction

Global warming has led to a sustained increase in ambient temperature, which has become a critical abiotic stress factor limiting modern intensive poultry production. Poultry are characterized by high metabolic rates, dense feather coverage, and the absence of sweat glands, which results in limited thermoregulatory capacity. Under prolonged or acute high temperature conditions, poultry are susceptible to heat stress, which disrupts homeostasis and induces a series of physiological disorders, including exacerbated oxidative stress, immune dysfunction, intestinal barrier damage, and abnormal apoptosis. Ultimately, heat stress leads to substantial production losses in poultry. For broilers, chronic heat stress may reduce daily weight gain by 9.8%-51% and feed intake by 9.2%-30%, worsen the feed conversion ratio by 0.17, elevate mortality risk by 3.74-fold, and markedly decrease breast meat yield. In laying hens, heat stress lowers egg production rate by 11%-36.4%, egg weight by 3.41%, and eggshell thickness by 5%-8%, with mortality rising significantly. These losses cause severe economic losses to the poultry industry. Therefore, the development of safe, efficient, and scalable nutritional strategies to alleviate heat stress in poultry has become a research priority in the fields of animal nutrition and production.

Taurine (2-aminoethanesulfonic acid) is a sulfur-containing conditionally essential amino acid that acts as a downstream metabolite of methionine and cysteine metabolism. It is widely distributed in different tissues and organs of animals. As an important functional amino acid, taurine exhibits its physiological roles mainly in the following four aspects. Taurine exerts multiple protective effects on heat-stressed poultry. It can effectively enhance the antioxidant capacity of the body, scavenge excessive reactive oxygen metabolites induced by high temperature, reduce lipid peroxidation damage, and maintain the normal morphological structure of cells. Meanwhile, taurine improves the immune status of poultry, alleviates excessive inflammatory responses caused by heat stress, and prevents immunosuppression induced by continuous high temperature stimulation. In addition, taurine stabilizes the cell membrane structure, maintains intracellular osmotic pressure balance, mitigates high temperature-induced cell damage and abnormal cell death, and protects the integrity of tissues and organs. Furthermore, dietary taurine supplementation can promote protein deposition, alleviate muscle atrophy, enhance nutrient digestion and utilization, regulate lipid metabolism, and effectively stabilize the growth performance and reproductive capacity of poultry under a high-temperature environment .

Although taurine plays a central role in physiological activities and stress resistance, its endogenous synthesis capacity is limited and only meets basal physiological requirements. Under stress conditions such as heat stress, high production intensity, and high stocking density, endogenous synthesis is far from sufficient to meet the body's needs. Moreover, conventional plant-based feed ingredients contain very low levels of taurine. Therefore, exogenous supplementation via feed or drinking water is necessary to effectively alleviate heat-stress-induced damage. Studies have confirmed that exogenous taurine supplementation via feed or drinking water can effectively mitigate heat stress damage in poultry, which represents a promising nutritional strategy for heat stress management.

2. Application of Taurine in Alleviating Heat Stress

2.1 Taurine supplementation

Under heat stress conditions, taurine can be administered either as a feed additive or via drinking water. The optimal supplemental dose is influenced by poultry species, growth stage, stress type (acute/chronic), and ambient temperature and humidity, and thus requires tailored application protocols.

In broiler production, under chronic heat stress (constant high ambient temperature of 32-34 °C), dietary supplementation is the preferred route. Supplementation with 5 g/kg (0.5%) taurine significantly increases average daily feed intake and daily gain, reduces the feed-to-gain ratio, alleviates breast muscle wasting, improves breast meat pH, reduces drip loss and lightness (L*) value, enhances meat quality, and decreases hepatic lipid deposition. Under acute heat stress or when feed intake is markedly reduced, taurine should be administered preferentially via drinking water at a dose of 5-8 g/L. This route provides rapid absorption and uniform distribution, quickly alleviating the outbreak of oxidative stress and cellular damage induced by high-temperature.

Taurine

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- Improve laying rate and average egg weight significantly, and prolong the peak laying period.
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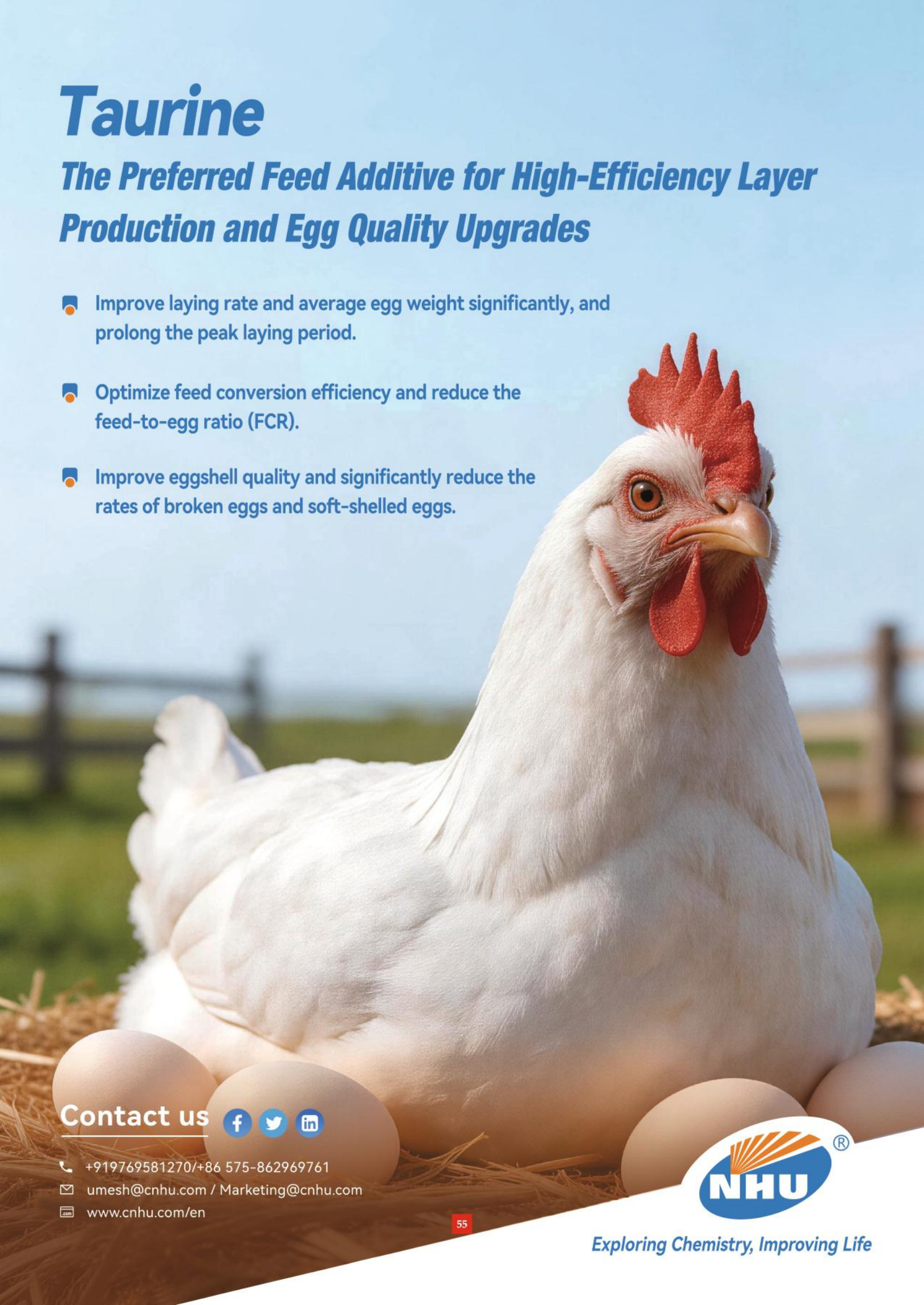

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In laying hen production, under sustained summer heat stress, dietary supplementation with 3 g/kg taurine stabilizes the laying rate, increases egg weight, improves eggshell strength and thickness, reduces the rate of cracked and deformed eggs, alleviates fatty liver hemorrhagic syndrome, and reduces mortality. For high-producing and aged laying hens during heat stress, the dose can be increased to 5 g/kg to compensate for insufficient endogenous taurine synthesis under high-yielding conditions and to enhance antioxidant and stress resistance capacities.

Regarding the supplementation timing, supplementation initiated 7–10 days before the onset of the hot season can effectively increase the body's antioxidant reserves, providing a preventive effect. Continuous supplementation throughout the heat stress period maximizes the mitigation of production losses. Taurine is stable, non-toxic, and residue-free in animals, demonstrating excellent applicability for production.

2.2 Combined application of taurine with other functional additives

A single additive often cannot cover the multidimensional damage caused by heat stress. The combined use of taurine with other anti-stress, antioxidant, or gut-protective functional additives can produce synergistic effects through complementary targets and overlapping physiological functions. This approach is particularly suitable for intense stress scenarios such as extreme heat, high humidity, and high stocking density, representing an important direction for nutritional management of heat stress in poultry.

Taurine combined with betaine: Both are effective osmolytes that synergistically stabilize cellular osmotic pressure and reduce cell dehydration caused by heat stress. They are highly complementary in antioxidant capacity, intestinal barrier protection, and alleviation of lipid metabolism disorders. Taurine primarily scavenges ROS and protects mitochondrial structure, while betaine provides methyl groups and maintains intestinal morphological integrity. A recommended combination is 5 g/kg taurine and 0.5 g/kg betaine, which is suitable for long-term heat stress management in broilers and laying hens in hot and humid regions.

Taurine combined with vitamin C and vitamin E: This forms a classic antioxidant combination. Vitamin C and vitamin E directly act on free radicals generated during metabolism, reducing cellular damage. Taurine, on the other hand, modulates antioxidant-related pathways, promoting the synthesis and activity of endogenous antioxidant enzymes and thereby enhancing the body's own antioxidant defense capacity. A recommended combination is 5 g/kg taurine, 300 mg/kg vitamin C, and 100 mg/kg vitamin E.

Taurine combined with probiotics and prebiotics: This combination synergistically maintains intestinal health. Taurine protects the integrity of the intestinal mucosal barrier and reduces intestinal leakage, while probiotics modulate the gut microbiota and enhance nutrient absorption. Probiotics (e.g., Lactobacillus) can effectively alleviate heat stress by improving gut microbiota and enhancing intestinal barrier function, thereby improving growth performance and immune function in poultry. Their combined use with taurine mitigates heat stress induced intestinal morphological damage and dysbiosis.

When combining additives, the principles of effect superposition and cost control should be followed, prioritizing combinations with different mechanisms of action. Supplementation levels can be appropriately increased under extreme heat and severe stress conditions.

2.3 Practical application considerations

For dietary supplementation, thorough mixing is essential to avoid local concentration differences that could affect efficacy. For administration via drinking water, the solution should be prepared fresh daily and used immediately, good water quality should be ensured, and mixing with strong oxidizing agents is not recommended. The supplemental dose should be appropriately increased as ambient temperature rises and gradually reduced when temperatures fall. Combining taurine supplementation with management measures such as ventilation, cooling, and reduced stocking density can maximize its anti-heat-stress effects. The effective dose range in current research is relatively broad. In practical application, the dose should be adjusted according to cost-effectiveness analysis and specific stress intensity.

3. Conclusion and Prospects

Heat stress poses a serious threat to poultry health and production performance. Dietary taurine supplementation is a safe and effective nutritional strategy to alleviate the detrimental effects of heat stress. Taurine exerts its protective roles by enhancing antioxidant capacity, regulating immune function, maintaining cellular integrity, and improving product quality. Future research should focus on determining the optimal supplementation levels for distinct poultry species and growth stages, exploring synergistic effects with other functional additives, and elucidating the underlying molecular mechanisms.

With the intensification of global warming, further studies on the application of taurine will provide vital theoretical support for the sustainable development of the poultry industry.

References are available on request

Li Mengying[1], Zhang Lei[1],* Zhang Honghe[1], Sun Xiaowei[1]

[1]Researchers, Zhejiang NHU Company Ltd., Animal Nutrition Application Service Center

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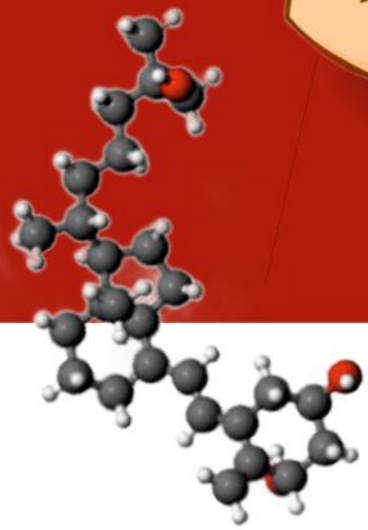

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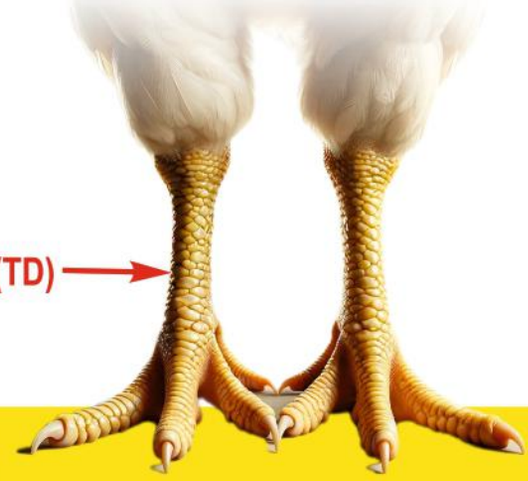

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FIBRE IN MONOGASTRIC: FROM UNDESIRABLE TO BENEFICIAL NUTRIENT

Xavière Rousseau
Global Poultry Technical Manager AB Vista

There is a high interest towards fibre understanding and how this can be optimally used in feed formulation for monogastric, to improve performance and guarantee a good gastrointestinal health. The past years a lot of work has been conducted by the AB Vista team, in cooperation with researchers from across the globe, in the area of fibre for monogastric nutrition.

Extensive work has been done to better charac- terize fibre beyond the traditional measure-

ment of crude fibre in poultry, or Neutral Deter- gent Fibre (NDF) and Acid Detergent Fibre (ADF) in swine. Thanks to the NIR technology it is now feasible to quickly and robustly assess the charac- teristics of the total dietary fibre including lignin and total and soluble Non-Starch Polysaccharides (NSPs) based on constituent sugars (Gomes et al., 2020). Soluble NSPs seems to be a relevant cri- terion to look at, due to their effect on viscosi- ty, transit rate, digestibility as well as in being the main substrate for hindgut fermentation resulting in Short Chain Fatty Acid (SCFA) production. Recent data suggests that more mature animals, with an established fibre fermenting microbiome, respond positively to higher level of soluble NSPs whilst younger animals, if the microbiome has not been stimulated to ferment fibre, would respond negatively in terms of performance (Gomes et al., under publication).

Soluble NSPs can be beneficial in terms of growth performance and gut functionality through

the development of a fibrolytic environment and limiting the potential pathogenic bacteria growth (Nguyen et al., 2021; Rousseau et al., under pub- lication), but to obtain this response it needs to be used correctly.

In broiler chickens, Nguyen et al. from Univer- sity of New England, Australia, investigated the effect of fibre on gastro-intestinal tract develop- ment, welfare and behaviour. They confirmed what Bedford et al., (1991) observed earlier as a linear increase of ileal viscosity with higher concentration of soluble NSPs. This effect is more pronounced in wheat than in corn-based diets, mainly because of the higher NSP content in wheat and greater pro- portion of higher molecular weight NSP in wheat compared to corn (Bedford et al., 1991; Kiarie et al., 2014) but could also be explained by the differ- ent soluble components proportion between both cereals. How the birds can deal with soluble NSP depends on several factors (environment, litter etc) as it will determine the establishment of the micro- biome and explain therefore why different results can be achieved depending on how studies are con-

ducted. Nguyen et al. also showed that more solu- ble NSP in the diet means lower pH in the lower gut, reflecting more fermentation of carbohydrates into SCFA, giving less opportunity for pathogen- ic bacteria to establish as described previously by Apajalahti (2005). When calculating the total feed fibre composition from the diets reported by Nguy- en, using the values reported in the Fibre Guide (AB Vista), it was possible to isolate the effects of the different soluble NSPs and the main driver for SCFA production was the soluble Arabinose + Xy- lose fraction while the other soluble components had limited or even negative effect in terms of fibre fermentability. These results reinforce that beyond the relevance to look at NSP solubility, it's also im- portant to look at the different components within this fraction.

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Researchers from the Universitat Autonoma de Barcelona used the AB Vista FQS NIR calibrations to explore the nutrient variability depending on the genetics of 8 maize hybrids as well as position of the grains in the cob (basal, well developed grains ver- sus apical, less well-developed grains; Melo-Duran et al., 2021). Interestingly, in the majority of the criteria evaluated, there was an interaction between

the genetic and the position of the grain (apical vs basal), often indicating poorer feeding value of the apical grains but for some of the hybrids there were minor differences between apical and basal grains, suggesting that those hybrids would give less vari- ability in a grain crop. Regarding fibre, a large vari- ation was also observed for total and soluble NSPs including the arabinoxylan (AX) concentration. Al- though the AX concentration in maize is low com- pared to other cereals this work showed that genet- ics can play an important role with a range from

2.2 g/kg to 5.3 g/kg AX. This explains why some corns could behave like wheats in terms of viscosity but also highlights why the effect of xylanase in corn-based diet can fluctuate.

Xylanase and even more a stimbiotic product through the arabino xylo-oligosaccharides (AXOS) and xylo-oligosaccharides (XOS) production would be beneficial in bringing soluble compounds able to modulate the microbiome in the caeca. Relevance of a ß-glucanase in highly viscous diets (containing both ß-glucan and AX) is being questioned. ß-glu- canase, although reducing the viscosity and the mo- lecular weight of ß-glucan, did not affect the fer- mentation or the production of SCFA (Karunaratne

et al., under publication). Morgan et al. from the University of New England (under publication) has shown that, in broilers fed wheat-barley based diet, a stimbiotic decreased the concentration of ß-glu- cans in the ileal digesta and reduced the viscosity to the same extent as a combination of a xylanase and a ß-glucanase but only the stimbiotic was prov- en to increase SCFA concentration in the hindgut, showing increased carbohydrate fermentation. Even though the stimbiotic product does not contain a ß-glucanase itself, it could potentially stimulated production of this and other fibre degrading en- zymes by the microbiome (and hence reduced ß-glucan concentration as well as viscosity) which is an efficient strategy to alleviate the negative effect of barley in broiler diets.

In fact, several studies reported the beneficial effect from stimbiotic supplementation on mi- crobiome modulation (Cordero et al., 2019; Par- ra Perez et al., 2021) through the stimulation of the fibrolytic bacteria that results in higher SCFA, low pH and increased caecal bacterial enzyme ac- tivity (Marinho et al., 2007; González-Ortiz et al., 2021). Altogether allowing a better gut resil- ience making animals better able to cope with en- teric challenges. In fact, recent studies in poultry (Rousseau et al., under publication) and in swine (Cho et al., 2020) have demonstrated that the stimbiotic may be of interest to mitigate the en- teric challenges animals are facing in commercial production systems. In the study from Cho et al., (2020), the stimbiotic reduced the inflammatory response from pigs placed in poor sanitary condi- tions, but also reduced the number of antibiotic interventions by 45%. Stimulating a more fibro- lytic microbiome and lowering protein fermenta- tion resulted in higher performing animals.

In conclusion, there is clear evidence that pro- moting carbohydrate fermentation is something to consider and must be a goal to achieve for anyone who wants to extract the hidden value from hindgut fermentation with healthier animals. Better charac- terisation of the fibre content of feed ingredients and use of stimbiotic represents a relevant strategy to bring better gut resilience to the animals facing multifactorial sources of challenges in commercial production systems.

For further information or references please contact emea@abvista.com

About Dr Xavière Rousseau

Dr Xavière Rousseau is Global Poultry Technical Manager in AB Vista based in France. She joined the company 9 years ago after completing her PhD working on dietary phosphorus optimisation in poultry and pigs with INRAE (France) and Agriculture and Agri-Food Canada. During this time, she built her knowledge on animal physiology and on the interactions between calcium, phosphorus and animal physiology before joining AB Vista team where she has developed her expertise on enzymes and how-to bring enzymes value to reach the different production objectives. Her last area of interest is to look at the dietary fibre fraction and how to better characterize this substrate as looking at the tools to analyse in order to define different strategies to optimize their use that would make sense for monogastric nutritionists looking for better productivity.

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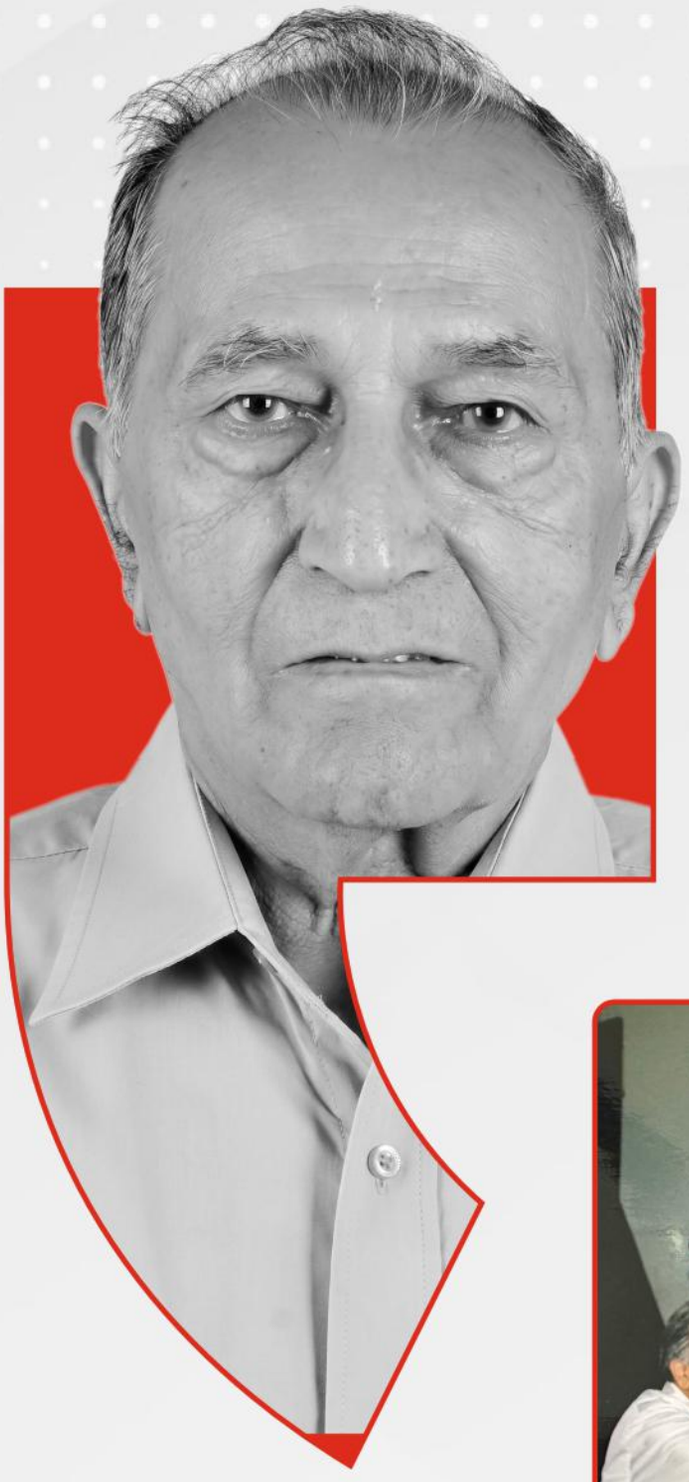


Legend SERIES 28

> **In our journey we visited many faces with our poultry Sector legends, and one among them is Dr. Ramesh Thaper**

Are you originally from Gurgaon?

I (Dr. Ramesh Thaper) am originally from Ludhiana (Punjab) and later shifted to Gurgaon (Haryana). I did my BVSC in the year 1958 and after serving for a few years in Government job in Animal Husbandry Department, joined the private industry in Pfizer pharmaceutical company. I represented Poultry International in India, published from USA for many years and was also Managing Editor for Dairy Guide and Poultry Guide publications from 1983 to 1996.

During my working in private sector, I had travelled extensively to USA, Canada, Europe, Japan and several other countries to attend Poultry and Livestock Exhibitions and International Conferences on Poultry and Dairy. I had also given lectures and presentations on several International platforms.

Why did you choose the Poultry profession

After almost 30 years working in private sector, I joined as Consultant with American Soybean Association / US Soybean Export Council, in the year 1997 and worked till 2010 before taking the retirement. While working in USSEC, I promoted use of soybean meal and full fat soybean in poultry and dairy industry. During that period, I also took a group of Poultry and Dairy Industry Leaders to USA to show them the latest trends in poultry and dairy for successful farming. I wrote several articles which were published in leading poultry and dairy journals in India and abroad.

What is the best thing you liked in your journey

During my Presidentship of Vets Club, Ludhiana, Punjab Government allotted 2000 sq. yards of prime land on Ludhiana-Moga Road, opposite Milk Plant, Ludhiana for the construction of BLUE CROSS BHAWAN. With the efforts of all Vets Club members, donations were collected from the industry and fellow veterinarians, to construct some structures on the plot. Now young veterinarians are working hard to collect donations from fellow professionals in India and abroad. A spacious hall is under construction at the site. Soon the dream of BLUE CROSS BHAWAN, in Ludhiana (Punjab) will be fulfilled, with the efforts of young veterinarians of Punjab. After my retirement, I has been more actively involved in Vets Club activities, doing social services for the welfare of animals. On completing 80 years of age, Vets Club, Gurgaon honoured me for my contributions to the veterinary profession.

Please tell about your family.

My son Ricky Thaper, with his father's guidance has been successfully working in poultry industry for the last 40 years. My grandson is well settled in Canada for the last 10 years.

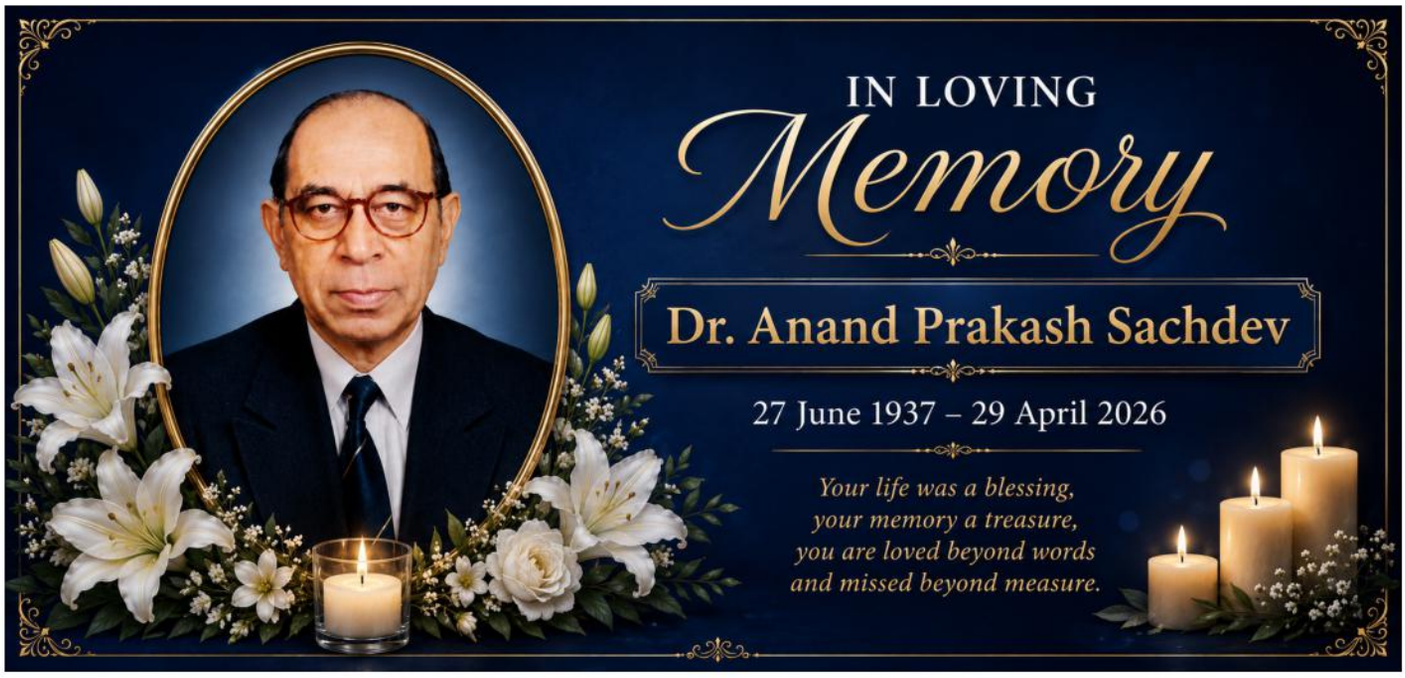
What is your favourite eatery food?

In food, I enjoy all kinds of cuisine and his current hobbies are reading books.

What is your message for next generation entering this business?

For message to new generation, Dr. Thaper said today's new generation is technically sound and works hard for their bright future. The protein rich food demand is increasing in the country, so they have bright future in Poultry, Dairy and Aqua Industry. In concluding remarks, Dr. Thaper said Be Honest, Sincere and Confident, Success will be Yours.

Host by:
Dr. Ramesh Sikka
Founder Member
Anand Sikka Veterinarians Foundation (India)
+91 98909-63144 sikkaramesh44@gmail.com



Early Life and Education

Born in Firozpur, **Dr. Anand Prakash Sachdev** was a distinguished veterinary professional whose career spanned over six decades. He earned his veterinary degree from **Jawaharlal Nehru Krishi Vishwavidyalaya (JNKVV)**, Jabalpur, in 1958, followed by a Post Graduate Diploma in Animal Husbandry from the **Indian Veterinary Research Institute (IVRI)** in 1959.

Professional Journey

- Dr. Sachdev's career was marked by a seamless transition from public service to corporate leadership:
- **1959 - 1962:** Superintendent, Cattle Breeding Farm, Bassi (Government of Rajasthan).
- **1962 - 1964:** Lecturer at DAV College, Ajmer (University of Rajasthan).
- **1964 - 1966:** District Manager, Animal Health Division, Pfizer Ltd.
- **1966 - 1978:** General Manager at Bhagwan Dass & Company (Unichix). In 1972, he traveled to Czechoslovakia to facilitate the historic introduction of the Grandparent PSD breed to India.
- **1978 - 1983:** General Manager of Marketing at Kegg Farms.
- **1983 - 1984:** Vice President at Arbor Acres Farms.

Entrepreneurship and Global Impact

In 1984, Dr. Sachdev became a pioneer in the field by launching **Blue Cross Consultants**, one of the first independent veterinary consultancies in India. Through this venture, he promoted the **Hybro (Broiler)** and **Hisex (Layer)** breeds across India, Nepal, Bangladesh, and Bhutan.

A Legacy of "Firsts"

- Dr. Sachdev was a visionary who modernized the Indian poultry landscape through:
- **International Development:** Leading livestock projects for the Government of Zambia.
- **Innovation:** Introducing plastic egg trays to the Indian market and facilitating vaccine imports from Rhône Mérieux, France.
- **Trade:** Serving on delegations to the Middle East to study the poultry meat and egg trade.
- **Strategic Leadership:** Serving as the Program Coordinator for the US Grains Council (1994-2004), where he championed the use of corn in poultry diets.

Final Years and Retirement

- Following his formal tenure with international councils, Dr. Sachdev remained a vital force in the industry:
- **2004 - 2015:** Continued active work as an independent consultant across the livestock and food processing sectors.
- **Philanthropy:** During this period, he expanded his portfolio to include significant philanthropic activities, giving back to the community that supported his long career.
- **Retirement:** He officially retired in 2017, though he remained a beloved figure in the professional community, staying in close contact with his industry peers and friends until his passing.

Dr. A.P. Sachdev's contributions laid the foundation for the modern Indian poultry industry. He will be remembered as a mentor, a pioneer, a visionary leader and Gem of the Gems..

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Composite Premix Systems in Modern Poultry Nutrition

trouw nutrition
a Nutreco company

Dr. Pothanna Technical Manager (Trouw Nutrition)

Introduction

Mash feed continues to be the most widely adopted feeding system in the poultry and livestock industry because of its simplicity, flexibility, cost-effectiveness, and ease of implementation at both feed mill and farm levels. For decades, conventional mash feed manufacturing has played a critical role in supporting animal productivity by enabling nutritionists to formulate precise diets based on species, age and production stages.

Traditionally, micro-ingredients such as vitamins, minerals, amino acids, enzymes, toxin binders, and other functional feed additives are incorporated individually into the mixer. While this approach remains widely practiced, the growing intricacy of modern feed formulations has introduced several operational challenges. Achieving uniform distribution of low-inclusion ingredients, maintaining dosing accuracy, minimizing segregation, and efficiently handling multiple additives during feed processing can become difficult, particularly under large-scale production conditions.

In recent years, feed formulations have expanded beyond conventional raw materials to include a broader range of functional components such as acidifiers, probiotics, antioxidants, and other bioactive compounds. While these additions enhance performance and resilience, they also increase formulation complexity and place greater demands on mixing precision and process control.

To address these challenges, composite premix technology has emerged as an advanced solution within conventional mash feed systems. By combining multiple micro-ingredients into a single, homogeneous blend prior to inclusion, composite premixes help improve mixing efficiency, reduce handling complexity, and enhance nutrient uniformity in the final feed.

However, the use of composite premixes also requires careful consideration. Nutrient stability, ingredient compatibility, and potential interactions among vitamins, minerals, and functional additives during processing and storage can influence overall efficacy if not properly managed through meticulous formulation and quality control practices. The selection of appropriate raw materials, carrier systems, mixing technologies, and storage conditions plays a vital role in preserving nutrient integrity and ensuring optimal bioavailability.

Therefore, both conventional mash feed systems and composite premixes hold significant relevance in modern poultry nutrition. While mash feed remains the foundation of feed manufacturing, composite premixes offer a strategic approach to improving precision, consistency, and functional performance when designed and applied effectively.

Composite Premix

A composite premix is a scientifically formulated blend of multiple micro-ingredients combined into a single homogeneous mixture prior to incorporation into animal feed. These premixes typically include vitamins, minerals, amino acids, enzymes, toxin binders, acidifiers, antioxidants, probiotics, betaine, and other functional additives in well-adjusted proportions.

In modern poultry and livestock nutrition, the inclusion of multiple functional additives at very low inclusion levels has become increasingly common. Under such conditions, achieving uniform distribution of individual ingredients in conventional mash feed systems becomes challenging. Composite premixes address this limitation by improving dispersion and ensuring a more consistent supply of nutrients throughout the feed.

Besides facilitating mixing uniformity, composite premixes contribute to overall feed system efficiency by supporting:

- Precision nutrition through accurate nutrient delivery
- Better feed consistency across batches
- Reduction in weighing and handling errors at the feed mill
- Improved feed mill efficiency
- Simplified inventory management
- Consistency in animal performance

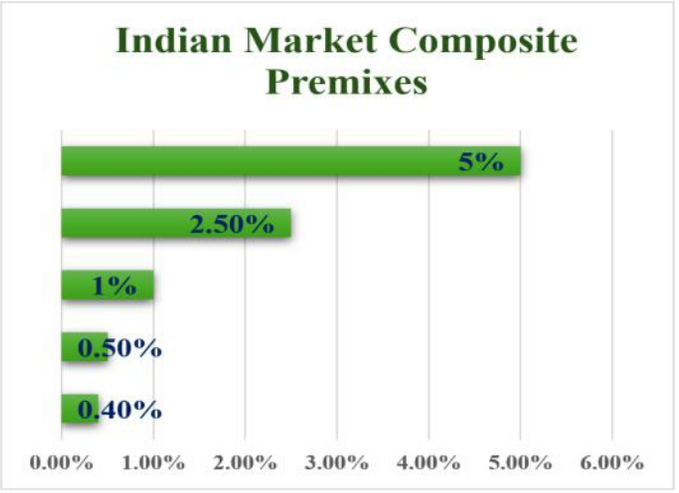
An important advantage of composite premixes lies in their flexibility.

They can be customized based on species, production stage, and specific field challenges such as heat stress, gut health management, liver function support, and mycotoxin risk mitigation. This adaptability makes them a valuable tool in addressing region-specific and farm-level nutritional requirements.

In the Indian poultry industry, 0.4%, 0.5%, 1%, 2.5%, and 5% composite premixes are commonly used, each offering distinct functional and practical advantages. The choice of inclusion level is influenced by feed mill capabilities, formulation strategy, ingredient availability, and the degree of nutritional precision required.

Lower inclusion premixes, particularly 0.4% and 0.5%, are widely adopted in layer feed as flexible, near-universal solutions. These formulations typically exclude fixed amino acid profiles, allowing nutritionists greater freedom to adjust protein sources and incorporate unconventional raw materials based on cost and availability.

In contrast, higher inclusion premixes such as 1%, 2.5%, and 5% often contain defined amino acid specifications along with a broader range of functional additives.



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While these systems offer improved standardization and ease of formulation, they require careful alignment with bird age, production stage, and performance targets to fully realize their benefits.

Key Practical Considerations

In composite premix formulation, the selection of mineral sources is critical for maintaining nutrient stability, feed quality, and shelf life. Among phosphorus sources, Mono Calcium Phosphate (MCP) and Di Calcium Phosphate (DCP) are commonly used based on formulation and handling requirements.

Source	Advantages	Disadvantages
MCP (Mono Calcium Phosphate)	Higher phosphorus availability, better digestibility, improved nutrient utilization, greater formulation flexibility	Hygroscopic in nature, may lead to bag bulging, caking, reduced flowability, and potential vitamin stability issues during storage
DCP (Di Calcium Phosphate)	More economical, widely available, better physical stability, lower moisture absorption, easier storage and handling	Lower phosphorus availability and comparatively lower nutrient utilization than MCP

DCP is generally preferred in commercial premixes due to its better physical stability, lower moisture absorption, ease of handling, and cost-effectiveness under practical storage conditions.

Ingredient Interactions and Nutrient Stability

One of the key challenges in composite premixes is the interaction between vitamins, minerals, and other functional additives during storage and feed processing. Certain inorganic minerals can accelerate the oxidation of sensitive vitamins, leading to reduced nutrient stability and biological effectiveness before feed consumption.

Additionally, the source and form of minerals significantly influence nutrient utilization. Inorganic minerals generally have lower bioavailability compared to organic or chelated forms. As a result, improper ingredient selection and incompatibility among nutrients can adversely affect nutrient availability, animal performance, and overall feed efficiency.

Importance of Carriers and Density in Composite Premixes

Both organic and inorganic carriers are commonly used in composite premix formulations, with selection depending on formulation objectives, physical properties, and cost considerations. Inorganic carriers such as calcium carbonate, dicalcium phosphate, and silica-based materials are widely used for their consistent particle size, density, and compatibility with various nutrients.

Organic carriers, including rice hulls, wheat bran, rice bran, maize bran, and soybean hulls, are also used based on availability and desired functional properties. These materials can contribute to moisture absorption, improved bulk characteristics, and better handling during processing.

The choice of carrier should be based on factors such as particle size, bulk density, moisture content, interaction with active ingredients, and overall impact on premix stability, rather than preference for any specific material.

Homogeneity and Quality Control

Proper homogeneity is essential in composite premixes to ensure uniform nutrient distribution and consistent animal performance. Good mixing uniformity supports feed quality, nutrient accuracy, and overall product consistency.

Regular quality control is critical to maintain premix stability and effectiveness. Key parameters such as moisture content, physical stability, coefficient of variation (CV), and vitamin recovery should be routinely monitored to ensure nutrient integrity during manufacturing and storage.

In addition, maintaining fresh stock and minimizing storage duration are important for preserving nutrient activity and shelf life. Appropriate storage conditions and efficient inventory management further help in maintaining product quality and achieving consistent field performance.

Conclusion

The success of composite premix systems depends on a well-controlled approach to formulation and manufacturing. Key factors such as ingredient compatibility, nutrient stability, carrier selection, density balance, mixing uniformity, storage conditions, and robust quality control collectively determine the consistency and effectiveness of the final product. Equally important is the role of modern feed mill infrastructure, including advanced mixing technology, accurate dosing systems, and controlled processing conditions.

Trouw Nutrition supports this approach through customized composite premix solutions backed by strong technical expertise, advanced manufacturing capabilities, and comprehensive laboratory support. By integrating scientific formulation with practical field application, composite premixes can significantly enhance feed quality, optimize nutrient utilization, and drive consistent animal performance.

As the industry continues to move toward precision nutrition and performance consistency, composite premix systems will play an increasingly important role in modern poultry feed manufacturing.

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Feed Formulation Lab 2026

Advancing Data-Driven Feed Formulation Through Practical Learning

The Feed Formulation Lab (FFL) continues to emerge as a flagship community engagement initiative of SEC India, with this being the second successful edition of the program conducted on 28th and 29th April 2026. The lab is designed to provide hands-on exposure to modern feed formulation techniques, aligning with industry needs and keeping pace with technological advancements.

For this edition, Dr. Uday Patil was engaged to lead the two-day technical sessions representing BestMix software for South Asia. In preparation, all 48 registered participants were contacted over Sunday and Monday (26th-27th April) and provided with complimentary two-month access to the software, along with login assistance. This ensured that participants arrived fully prepared, with the software installed and operational on their laptops. Minor technical issues were also resolved on Tuesday (28th April) prior to the commencement of sessions.

Hyderabad's strong ecosystem of leading feed and poultry companies provided an ideal backdrop for the program. To set the tone for the event, **Dr. Sandip Karkhanis**, **Managing Director of Noveltech Feeds** was invited as Guest of Honour for the inaugural session. He emphasized the importance of staying aligned with advancements in feed formulation and evolving industry practices. On the concluding day (29th April), **Suresh Chitturi**, **Chairman of Srinivasa Farms**, joined as Guest of Honour and delivered a motivational address encouraging young professionals to embrace innovation and prepare for emerging challenges in the feed industry. Strategically engaging such industry leaders also aligns with USSEC's objective of strengthening industry collaboration and enhancing the visibility of SEC-led initiatives.

The program commenced with an orientation session covering key dos and don'ts across 11 common areas where formulation errors or assumptions are frequently observed. These principles formed the foundation for the subsequent hands-on learning approach.

Over the two days, participants engaged in intensive practical exercises focused on cost and nutrient optimization using the software platform. One of the key learning outcomes was the transition from subjective decision-making toward data-driven formulation, where the system objectively determines optimal solutions based on nutritional and economic parameters.

Throughout the sessions, the software demonstrations highlighted how formulation decisions are increasingly influenced by ingredient consistency, amino acid profile, digestibility, and overall formulation economics. Through such technical engagements, SEC India aims to equip professionals with broader knowledge on global feed ingredient evaluation and value-based formulation approaches, including U.S. Soy.

The technical depth of the program was further strengthened through expert contributions from industry specialists. A speaker from Evonik provided an in-depth comparison of raw material quality, with particular focus on soybean meal characteristics, analytical parameters, and variability management.

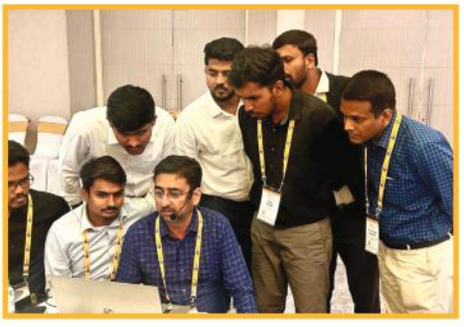
Additionally, Basilisa Reas joined virtually to present insights on how feed industry decisions in the Philippines are increasingly driven by value and quality considerations, particularly in the context of U.S. Soy. Her session offered participants a valuable global perspective on ingredient evaluation and differentiation across international markets.

Further guidance was provided by Jaison John and Franklin Manuel, who shared insights on the upcoming price and supply outlook of soybean meal over the next few months and discussed broader market considerations relevant to the feed industry. Dr. Saikat Saha's insights were especially valuable during the essential session, as raw material quality is the foundation long before an array of feed ingredients enter any formulation software.

The venue was fully equipped to ensure a seamless learning experience. Facilities included ample power access for participant laptops, dedicated high-speed Wi-Fi to support software functionality, multiple display screens for improved visibility during demonstrations, and reliable audio-visual systems. On-site IT support was also available throughout the program to promptly address any technical concerns.

The program concluded with a certificate distribution ceremony attended by SEC RAC members and Suresh Chitturi. RAC members also had the opportunity to observe the final lab sessions, where participants were actively engaged in solving formulation challenges, reflecting the practical and immersive nature of the training.

Overall, the Feed Formulation Lab successfully delivered a high-impact, hands-on learning experience using advanced technologies, reinforcing SEC India's commitment to building technical capability, fostering industry collaboration, and promoting data-driven decision-making in feed formulation.



PVS Group India Inaugurates New Office in Mangalagiri (Vijayawada) with Grand Pooja Ceremony

Mangalagiri (Vijayawada), India – PVS Group India, one of the largest manufacturers and exporters in the animal healthcare sector, proudly announced the inauguration of its newly expanded office in Mangalagiri (Vijayawada). The occasion was marked by a traditional pooja and ceremonial rituals attended by company leadership and the entire PVS family.

The new office has been developed around innovative and creative themes that reflect the company's progressive vision and working philosophy. Designed to enhance productivity and collaboration, the facility features modern infrastructure, including a cafeteria, a large meeting hall with a capacity of 1,000 people, a spacious presentation room, seminar halls, and a fully equipped back-office support system.

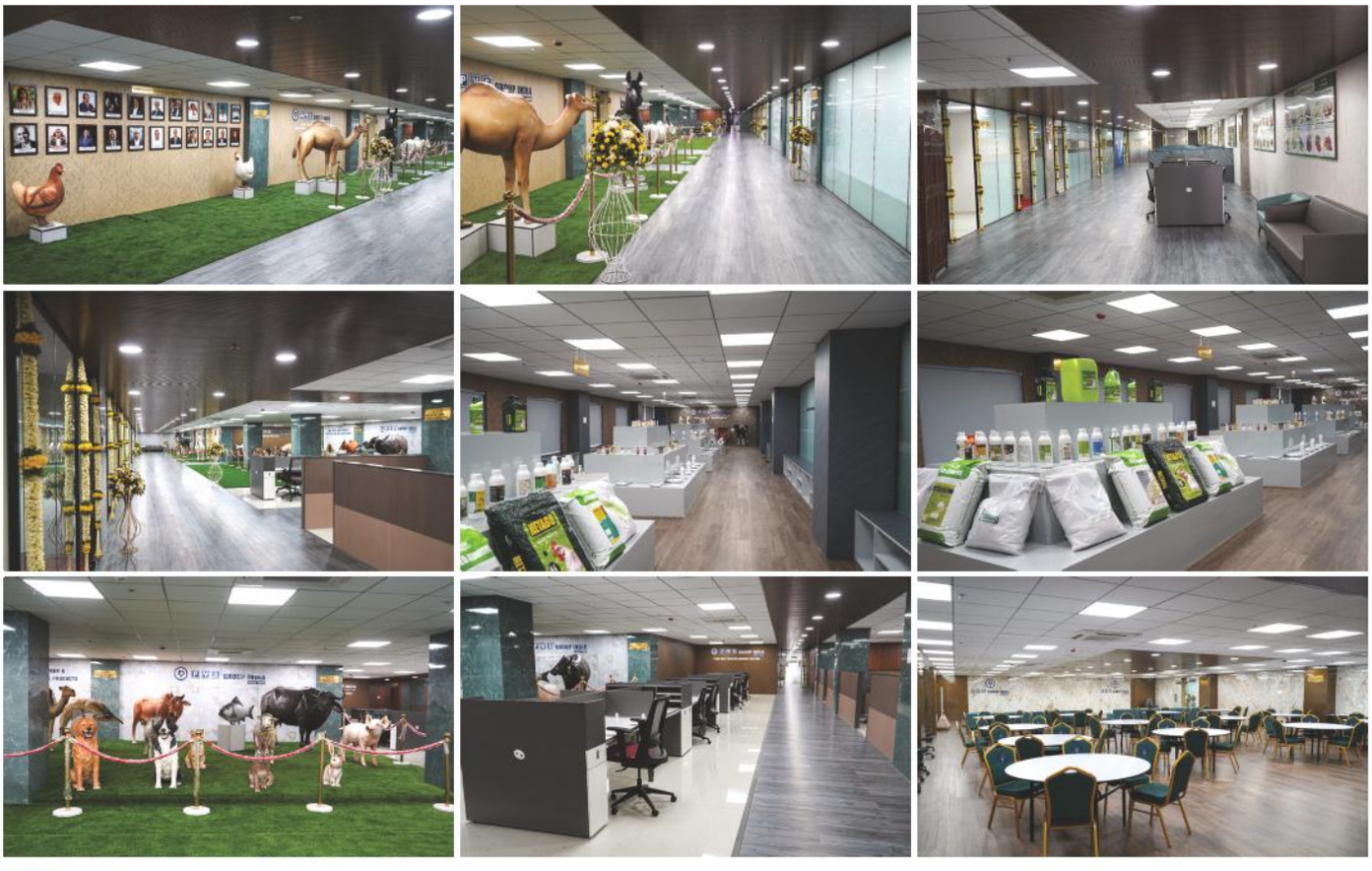
A unique highlight of the new office is its dedicated product showroom, where PVS displays its proprietary formulations and expertise in animal healthcare. Additionally, the company has incorporated an animal care showcase to demonstrate its commitment to improving animal health through scientifically developed products.

Currently, PVS Group India is a leader in the domestic aqua healthcare market and exports its products to over 65 countries worldwide. The expansion aligns with the company's vision to accelerate operational efficiency, strengthen its global presence, and achieve strategic goals within shorter timelines.

The inauguration ceremony was graced by Dr. Seshaiah V. Pamulapati, Chairman & Managing Director (CMD), and Mr. Arun Pamulapati, Director, along with employees and associates. The event was conducted with traditional rituals, symbolizing prosperity and success for the new venture.

Speaking on the occasion, Dr. Seshaiah V. Pamulapati and Mr. Arun Pamulapati expressed their satisfaction and happiness over the office expansion. They emphasized that the new facility will play a vital role in achieving the company's future milestones and enhancing team efficiency. They also reaffirmed their commitment to empowering employees and strengthening the organization's growth trajectory.

With this expansion, PVS Group India continues its journey as a leading force in the animal healthcare sector, steadily achieving new milestones and reinforcing its position both in India and across global markets.



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incubaFORUM ASIA 2026

Brings Together more than 350 Global Poultry Experts in Indonesia - Ricky Thaper

incubaFORUM ASIA 2026, a premier platform dedicated to innovation, knowledge exchange and collaboration across the poultry value chain was organised at Hotel Trembesi in Indonesia from April 28-30, 2026.

The conference brought together global experts to discuss technology, automation, welfare, sustainability, breeder management and incubation excellence shaping the future of the poultry industry and featured distinguished speakers including Dr. Edgar Orlando, Dr. Vincent Guyonnet, Dr. Udi Ashash, Loic Gault, Richard Mackie, Gabriela Menin, Alan Verrees, Dr. Faran Hameed, Dr. Thanakrid Luupanyalerd, Gordon Butland, Dr. Tugrul DURALI, Prof. Dr. Sjaak De Wit, Dr. Mark Anthony Gabriel, Rasel Ahmed, Stephen Evans, Keith Bramwell, PhD and Muntaser Salem , MBA, who shared valuable insights on technology, automation, vaccination strategies, and sustainable poultry production.

The session "Challenges, opportunities and outlook of the poultry industries in Asia" brought together influential voices including Mr. Ricky Thaper, Joint Secretary, Poultry Federation of India; Mr. Achmad Dawami, Chairman, Indonesian Poultry Breeding Companies Association, Mr. Jeffrey Ng Chonn Nge Ng, Advisor, Federation of Livestock Farmers Association of Malaysia and Dr.Farhan Farooq, Secretary General, World Poultry Science Association (WPSA) - Pakistan. The session was very nicely moderated by Mr. Yiannis Christodoulou, facilitating meaningful dialogue on regional industry outlooks. This interactive session brought the diverse regional perspectives from across Asia and the global poultry sector addressing the evolving sustainability landscape in the poultry sector.

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These companies had their booth at the conference- Royal Pas Reform, Phibro Animal Health, Petersime, Elanco, Jamesway, CEVA SANTE ANIMALE, 4Nutrition, Antitox. Additional valuable insights were delivered by Mr. Rasel Ahmed, Mr. Stephen Evans, Dr. Keith Bramwell, PhD, and Mr. Muntaser Salem , MBA, who shared practical approaches and scientific advancements aimed at improving poultry production efficiency and chick quality. The sessions and discussions were further strengthened by the moderation of Craige Allan.

incubaFORUM ASIA 2026 was a resounding success, widely appreciated for its high-quality technical content, diverse expert participation and strong networking opportunities.

Congratulations to Mr. Luis Carrasco, Managing Director, Grupo de Comunicación Agrinews, S.L., Mr. Arief Fachrudin, Coordinator-Asia, aviNews Asia, Ms. Carla García Alarcón, International event aviNews International, Ms. Isa Tan, Editor, aviNews Asia, NutriNews Asia, porciNews Asia, Mr. Ashraf Ali A, Sales-South Asia,aviNews Asia and NutriNews Asia and all other team members as they all deserve strong appreciation for delivering a well-structured and impactful conference that continues to strengthen knowledge-sharing and progress within the poultry industry.

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De Heus Animal Nutrition India Strengthens Industry Partnerships and Thought Leadership at

VIV Select India 2026

VIV Select India 2026, held from 22nd to 24th April 2026, emerged as a significant platform for innovation, collaboration, and knowledge exchange in the livestock and poultry sectors. Among the key participants, De Heus Animal Nutrition India stood out with a strong presence, strategic partnerships, and insightful contributions to industry discussions.

A Strategic MoU to Support Poultry Farmers and Drive Poultry Excellence

The highlight of Day 1 at VIV Square was the signing of a landmark Memorandum of Understanding (MoU) for "Precision Feeding and Farming for Independent Farmers in India", a RVO Cluster Program. The partnership brought together De Heus Animal Nutrition India, Manreet Hatchery, VDL Agrotech and Royal Pas Reform, reinforcing a shared commitment to advancing poultry production systems in India. Under this project the partners will work towards strengthening India's Poultry sector by working on:

- Precision Feeding and Farming; enhancing biosecurity and animal health management
- Building and operating a pilot facility integrating technologies and expertise of De Heus, Manreet Hatchery, VDL Agrotech and Royal Pas Reform
- Promote responsible use of antibiotics, AMR reduction and safer food for consumers

The MoU signing ceremony was graced by the presence of distinguished dignitaries, including Her Excellency Marisa Gerards, Ambassador of the Netherlands, and Ms. Marion, Agriculture Councillor of the Netherlands. Their presence underscored the growing international cooperation and the importance of Indo-Dutch partnerships in strengthening sustainable agriculture and livestock development.

Showcasing Innovation at the Exhibition Booth

Throughout the three-day exhibition, De Heus engaged with a wide spectrum of stakeholders through its interactive booth. The company showcased its advanced nutritional solutions, emphasizing sustainable practices, improved feed efficiency, and productivity enhancement across poultry and dairy segments. The booth served as a hub for farmers, industry experts, and partners to exchange ideas and explore future collaborations.

Knowledge Sharing at VIV Square

De Heus further cemented its role as a thought leader by actively contributing to knowledge sessions at VIV Square.

On Day 1, a Poultry Conference on "Advances in the Poultry Sector" featured a compelling session by Mr. Gerry Oude Elferink, Poultry Nutrition and Support Director, delivered an insightful talk on "Nourishing Future Generations with Modern Poultry Production Systems", his session highlighted the importance of efficient nutrition, sustainability, and technological advancements in meeting the growing global demand for poultry products and received a positive feedback and initiated conversations with various stakeholders of the industry.

On Day 2, the focus shifted to dairy, where Mr. Rutger Oudejans, Managing Director, De Heus Animal Nutrition India, addressed the audience during the Dairy Conference. His presentation on "India's Dairy in the Global Context" offered a comprehensive perspective on India's position in the global dairy landscape, emphasizing opportunities for growth, modernization, and international competitiveness.

Strengthening Industry Commitment

De Heus Animal Nutrition India's participation at VIV Select India 2026 reflected its commitment to fostering partnerships, driving innovation, and supporting the evolving needs of the livestock sector. The MoU signing not only marked a milestone in collaborative progress but also reinforced the company's vision of building a sustainable and future-ready animal nutrition ecosystem in India.

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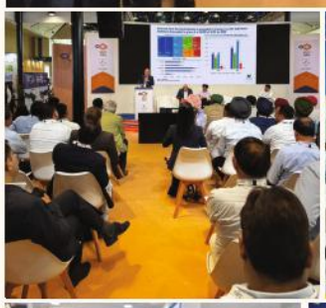
As the livestock industry continues to evolve, platforms like VIV Select India play a crucial role in shaping its future,a and De Heus remains at the forefront, contributing with expertise, partnerships, and a clear vision for growth.

"At De Heus Animal Nutrition India, our Feed for Food and Responsible Feeding program guide everything we do, ensuring safe, sustainable, and efficient nutrition that supports farmers, animal welfare, and the future of food"

- Mr. Amit Mittan, Commercial Director - De Heus Animal Nutrition India

"We are committed to Nourishing Future Generations by building sustainable supply chains and driving operational excellence, delivering consistent, high-quality nutrition solutions while ensuring efficiency, transparency, and sustainability" **- Mr. Tanveer Malik, Chief Operating Officer, De Heus Animal Nutrition India**





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EW Nutrition Celebrates Veterinarians as Guardians of Food, Health, and Sustainable Livestock Production

In recognition of the pivotal role veterinarians play in safeguarding animal health, food safety, and sustainable livestock production, **EW Nutrition** organised an exclusive evening titled **"Samman Sandhya"** in New Delhi on 23rd April 2026. The event coincided with **World Veterinary Day** and was held on the sidelines of **VIV Select India,** bringing together eminent veterinary professionals, industry leaders, and key stakeholders from the poultry and animal nutrition sectors.

The evening was dedicated to honouring veterinarians as the **silent guardians of global food systems and public health,** acknowledging their indispensable contribution across the livestock and poultry value chain from farm to fork.

Opening the programme, **Dr. Shirish Nigam, Managing Director - South Asia, EW Nutrition,** highlighted the evolving and expanding responsibilities of veterinarians & animal health professionals in today's integrated food systems. He emphasised that veterinarians play a critical role in bridging **animal welfare, food security, human public health, and sustainable production practices,** particularly at a time when the poultry and livestock industries face increasing challenges related to efficiency, biosecurity, and responsible nutrition.

The event was graced by several distinguished dignitaries, including:

- **Shri Tarun Shridhar,** Chief Guest, Former Secretary, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, and Director General, ICFA
- **Prof. (Dr.) P.K. Shukla,** Guest of Honour, Former Dean, DUVASU, Mathura; Former Joint Commissioner (Poultry), Government of India; President, IPSA and Head, Department of Poultry Science, DUVASU
- **Dr. Pankaj Kumar Singh,** Dean, PGS Patna Veterinary College

The evening also witnessed the participation of prominent industry leaders and office bearers, including: **Mr. Ranpal Dhanda,** President, Poultry Federation of India (PFI), **Mr. Sanjeev Kumar Gupta,** Vice President, Poultry Federation of India (PFI), **Mr. Ravinder Singh Sandhu,** Secretary, Poultry Federation of India (PFI), **Mr. Uday Singh Bayas,** President, Indian Poultry Equipment Manufacturers Association (IPEMA), **Dr. Sharad Kumar Singh,** President, UP Broiler Integration Association.

Their presence underscored the industry's collective commitment towards strengthening veterinary science, poultry health management, and sustainable animal nutrition through collaboration across academia, industry bodies, and solution providers.

During their addresses, the dignitaries shared valuable insights on the **evolving role of veterinarians & animal health professionals,** highlighting their increasing responsibility as custodians of food safety, animal welfare, public health, and environmental sustainability.

The discussions emphasised the need for **continuous collaboration, scientific innovation, and knowledge exchange** to effectively address emerging challenges in animal agriculture.

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Speaking on the occasion, **Dr. Shirish Nigam** reiterated EW Nutrition's commitment to working closely with veterinarians and animal health professionals. He stressed that **meaningful progress in animal nutrition and performance is only possible through strong partnerships with the veterinary community,** supported by science-driven solutions and a shared vision for sustainable growth.

The evening served not only as a platform for recognition but also as a forum for dialogue and networking, reaffirming the central role veterinarians play in shaping a resilient, responsible, and future-ready livestock and poultry sector.

EW Nutrition expressed its sincere appreciation to all veterinarians and animal health professionals who attended the event, acknowledging their unwavering dedication to advancing animal health, food safety, and sustainable production systems.

About EW Nutrition

EW Nutrition is an animal nutrition company that offers integrators, feed producers, and self-mixing farmers comprehensive animal nutrition solutions for gut health management, feed quality, digestibility, and more. With production facilities, offices, and development centers on 6 continents, EW Nutrition researches, manufactures, markets, and services its products and programs to support customers wherever they are.

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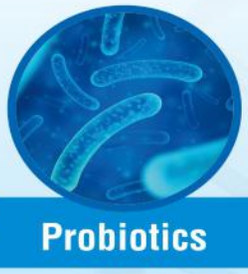
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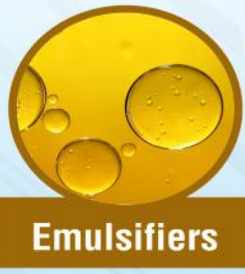
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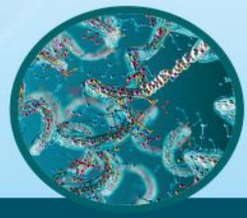
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VIP - Vets In Poultry
World Veterinary Day | National Press Conference

At a time when misinformation spreads faster than science, the poultry sector in India faces an unusual challenge: not disease, not production constraints, but perception. The National Press Conference organized by VIP-Vets In Poultry, on the occasion of World Veterinary Day, addressed one of the most pressing issues affecting the sector the growing ecosystem of myths and misinformation surrounding chicken and eggs.

Across India, more than 200 recurring myths influence consumer behaviour, media narratives, and even policy discussions. These myths range from concerns about hormones and antibiotics to misconceptions about bird flu, egg safety, nutrition, and environmental impact. While these narratives often originate from isolated incidents, partial information, or social media amplification, their impact is far-reaching.

The cost of misinformation is not theoretical. It is real, immediate, and deeply human. Farmers, often operating on tight margins, are the first to absorb the shock. A rumour can collapse demand overnight. A viral message can disrupt entire supply chains. Markets that run on habit quickly shift to fear. Importantly, these disruptions occur even when there is no change in scientific evidence, no new health advisory, and no verified risk to consumers.

The poultry sector is not just an industry it is a critical component of India's nutritional security. Chicken and eggs are among the most affordable and accessible sources of high-quality protein. They play a crucial role in addressing protein deficiency, supporting child growth, and improving public health outcomes. Misinformation, therefore, does not just harm producers; it directly affects national nutrition goals.

At the press conference, VIP presented a structured "Myth vs Fact" framework to address some of the most widely circulated beliefs. These included concerns around hormones in broiler chicken, antibiotic residues, the safety of consuming poultry during disease outbreaks, the nutritional value of eggs, and the perceived superiority of "desi" variants.

Scientific evidence remains clear and consistent. The use of growth hormones in poultry is not practiced due to biological, regulatory, and economic reasons. Antibiotic use in poultry is governed by evolving stewardship practices, compliance frameworks, and regulatory oversight, with increasing emphasis on responsible usage. Disease outbreaks such as avian influenza are managed through established surveillance and response systems, and food safety risks depend on proper handling and cooking rather than mere association with the disease event.

Similarly, long-standing consumer beliefs such as brown eggs being more nutritious than white eggs, or desi chicken being inherently safer than broiler chicken do not hold scientific ground. Egg shell colour is determined by breed and has no direct relationship with nutritional content.

Food safety, whether in eggs or meat, depends on hygiene, storage, handling, and cooking practices.

Another critical area addressed was the growing tendency to link poultry consumption with unrelated health conditions such as early puberty, infertility, or chronic diseases. Experts emphasized that such conditions are influenced by multiple factors, including lifestyle, environment, genetics, and broader dietary patterns. Isolating chicken or eggs as singular causes is not supported by evidence and risks oversimplifying complex public health issues.

The environmental narrative surrounding poultry was also discussed. While all food production systems have environmental footprints, poultry remains one of the most efficient converters of feed into protein. Waste management, when done responsibly, allows for recycling and productive use, including applications such as organic fertilizers and biogas. The focus, therefore, should be on improving systems and practices rather than generalizing entire sectors as harmful.

A key message from the conference was the need for responsible communication. In the age of instant information, the line between verified news and unverified content has blurred.

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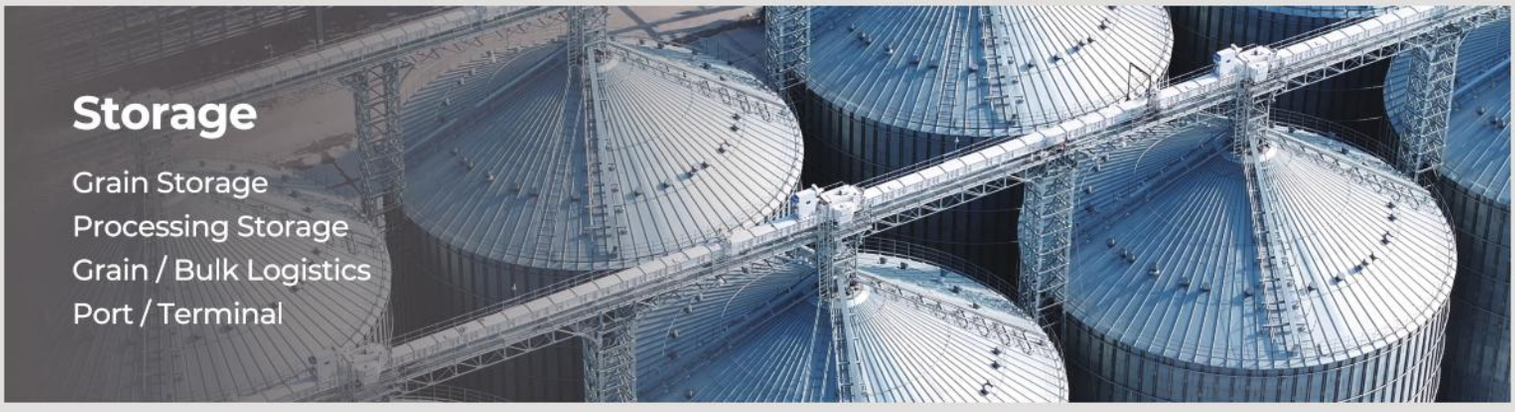

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VIP emphasized that outbreak-related news must be communicated with precision, clearly distinguishing between exposure risks and consumption risks. Public messaging must be grounded in verified data, supported by scientific evidence, and aligned with official advisories.

The role of regulatory bodies such as FSSAI, public health institutions, and veterinary authorities remains central in ensuring food safety. These systems are active, evolving, and responsive. At the same time, the media plays a critical role in shaping public understanding.

Responsible reporting, therefore, is not just about speed, but about accuracy, context, and clarity.

VIP - Vets In Poultry, as a professional body of veterinary experts, reiterated its commitment to scientific integrity, public health, and sectoral transparency. The organization highlighted that addressing misinformation is not merely a defensive exercise for the industry. It is a professional and ethical responsibility rooted in science, animal health, and consumer welfare.

As India continues its journey toward improved nutrition, food safety, and sustainable agriculture, the importance of trust cannot be overstated. Trust is built on facts. And facts must be protected.

Dr Santosh Ire, Secretary, VIP, presented the initiative and highlighted the need for scientific awareness.

Dr Ajay Deshpande, President, explained the role of VIP and emphasized the importance of poultry products in India's nutritional ecosystem and food market.

Dr Anju Deshpande, Media Head, along with Dr Anurag Jena and Dr Jeevan Sonawane, addressed widely circulated myths related to chicken and eggs, reinforcing evidence-based facts.

Dr Pinky Dalal, Dietician, AIMS Delhi shared practical and need base importance of protein in india and reality check of consumer mindset.

Regional Presidents Dr Vishal Rawat, Dr Sharad Singh & Dr Surender Jahangir stressed the importance of scientific and responsible poultry farming practices.

Mr Uday Byas, President, Poultry India, highlighted the critical role of the Indian poultry sector in ensuring national food security.

Mr Nawab Ali, President, UP Breeder Association enlighten need of vets and poultry protein.

The event was attended by major poultry associations, government authorities, and medical professionals.

VIP appealed to consumers across India to rely on verified information and connect with the VIP media team if they encounter misleading or unscientific news related to poultry.

For further information, clarifications, or expert insights, stakeholders and media professionals are encouraged to connect with VIP - Vets In Poultry.

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Biozene Showcases Innovation at VIV Select India 2026

The Ravioza Group marked a significant presence at the inaugural edition of VIV Select India 2026, which witnessed an overwhelming response from industry professionals and stakeholders across the globe.

As one of the prominent exhibitors at the event, **Biozene** attracted substantial footfall at its stall, engaging with customers, distributors, and partners from diverse international markets. The exhibition served as a strategic platform for the company to present its latest innovations, product portfolio, and future-ready initiatives.

A key highlight of Biozene's participation was the unveiling of its upcoming state-of-the-art manufacturing facility. The advanced infrastructure and forward-looking capabilities received widespread appreciation from visitors, reflecting the company's commitment to quality, scalability, and global standards. These developments underline the continuous growth trajectory of the Ravioza Group and its focus on strengthening its position in the animal health and nutrition sector.

Speaking on the occasion, **Dr. Dinesh Kumar Arora, Founder and CMD** of the Ravioza Group and Vice President of the Poultry Federation of India, described VIV Select India as a remarkable and impactful event. He noted that such platforms are instrumental in accelerating the company's global outreach and strengthening relationships with industry stakeholders.

Mr. Mohit Arora, Managing Director, Biozene, highlighted the strategic importance of the exhibition, emphasizing the strong international response and the meaningful business discussions that took place during the event. He expressed his gratitude to all visitors who engaged with the team, stating that their interest in the company's innovations, research initiatives, and upcoming manufacturing facility played a crucial role in making the participation highly successful.

Dr. Jeetendra Varma, Technical Director and President WVPA India, also acknowledged the success of the event and extended his appreciation to all contributors involved. He emphasized that the achievement was a result of collective effort and thanked the visitors and stakeholders for their valuable interactions and support.

Adding a technical and market perspective, **Dr. Srijit Tripathi,** General Manager, shared that the exhibition provided a valuable opportunity to closely understand evolving customer needs across different geographies. As a veterinary professional, he emphasized the importance of bridging research-driven innovations with practical field applications, ensuring measurable impact on productivity and profitability for farmers. He further noted that the strong interest in **Biozene's** product portfolio and manufacturing capabilities reinforces the company's positioning as a reliable and forward-looking partner in the global market.

During the exhibition, the Biozene team held extensive discussions with industry participants on its manufacturing advancements, new product developments, and upcoming projects. The strong response and positive feedback received reaffirm the company's strategic direction and industry relevance.

The **Biozene** team also held focused meetings with key stakeholders and potential partners from multiple international markets, including Bhutan, Sri Lanka, Egypt, Nepal, and the Philippines, along with several other countries. These interactions opened new avenues for collaboration, distribution partnerships, and market expansion, further reinforcing the group's growing global footprint.

Ravioza Group and **Biozene** remain committed to delivering best-in-class solutions to their customers and continue to invest in innovation, research, and infrastructure to meet the evolving needs of the global animal health industry.

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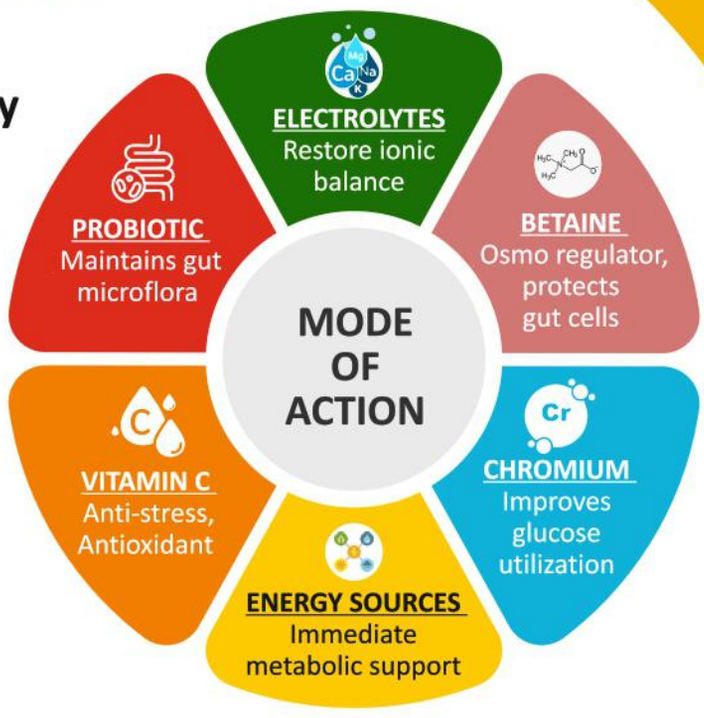

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Beyond Binding: The Science of Advanced Mycotoxin Binders

By Dr. Madri Brink, Global Technical Manager – Gut Health and Immunity, Orffa Additives B.V., The Netherlands. Sopaphan Pruekvimolphan, Technical Manager, Orffa (Thailand) Ltd.

In modern livestock production, mycotoxins are among the most critical yet often underestimated constraints on performance and profitability. These persistent fungal metabolites contaminate feed raw materials and cannot be removed or detoxified during the normal feed manufacturing processes. Their effects are frequently subclinical - impairing immunity, nutrient utilization, and gut integrity and increasing performance variability. Therefore, mycotoxin binders based on aluminosilicates such as clinoptilolite and layered phyllosilicates are key tools to mitigate risk in animals.

Known and emerging mycotoxins:

Feed contamination extends beyond the major mycotoxins (aflatoxins, deoxynivalenol, zearalenone, fumonisins, and ochratoxin A) produced by Aspergillus, Fusarium, and Penicillium. Emerging mycotoxins, including enniatin B and beauvericin, are frequently detected but remain less regulated despite their potential toxicity (Table 1).

Table 1. Emerging mycotoxins and key toxic effects

Mycotoxins	Key toxic effects
Enniatin B	Depolarizes mitochondria. Disrupts cellular metabolism.
Beauvericin	Oxidative stress: apoptosis, mitochondrial pathway and immune system. Immunosuppressive.
Alternariol	No acute toxicity, but cytotoxic and mutagenic *in vitro*, disruption of reproductive cycle, impaired fertility. Immunosuppressive.
Moniliformin	Broilers are very susceptible, genotoxic, immunosuppressive; causes heart damage, muscular weakness, and respiratory distress.
Fusaric acid	Mitochondrial dysfunction, oxidative stress, inhibits cell proliferation/DNA synthesis and synergistic with fumonisins.
Sterigmatocystin	Aflatoxin precursor; causes aflatoxin B1-like effects in animals but with lower acute toxicity. Bloody diarrhea, reduced milk yield and feed intake.

In modern livestock production, mycotoxins are among the most critical yet often underestimated constraints on performance and profitability. These persistent fungal metabolites contaminate feed raw materials and cannot be removed or detoxified during the normal feed manufacturing processes. Their effects are frequently subclinical - impairing immunity, nutrient utilization, and gut integrity and increasing performance variability. Therefore, mycotoxin binders based on aluminosilicates such as clinoptilolite and layered phyllosilicates are key tools to mitigate risk in animals.

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Bacterial toxins

In addition to fungal mycotoxins, bacteria like Clostridium perfringens also produce several toxins which are key virulence factors associated with necrotic enteritis in poultry.

- **Alpha toxin,** a phospholipase, is cytotoxic to various host cells, including erythrocytes and endothelial cells, contributing to tissue damage.
- **NetB toxin,** a pore-forming protein, plays a primary role in disease pathogenesis by disrupting intestinal cell membranes, leading to cell lysis and necrotic lesions in the gut.

The combined activity of these toxins contributes to intestinal damage, impaired nutrient absorption and reduced animal performance. Therefore, choosing binders with a proven binding capacity of targeted fungal and bacterial toxins are crucial.

Physical and chemical properties driving efficacy

A wide range of clays (aluminosilicates) are used as mycotoxin binders. In general, they are often grouped into two main classes: **tectosilicates (framework silicates)** and **phyllosilicates (sheet silicates)** - which differ in structure and, therefore, in how they interact with known and emerging mycotoxins and bacterial toxins produced by Clostridium spp. in the gastrointestinal tract.

Tectosilicates (framework silicates e.g., clinoptilolite)

Tectosilicates are crystalline aluminosilicates. They are made up of SiO4 and AlO4 tetrahedra that are connected to form a rigid, three-dimensional, honeycomb-like framework with a microporous system. Under the broad category of zeolite, clinoptilolite is one the most effective and widely used due to its high porosity which form the basis of its adsorption capacity. Highly polar mycotoxins such as aflatoxins are small enough to enter these pores where they interact with K+ and Ca2+ cations.

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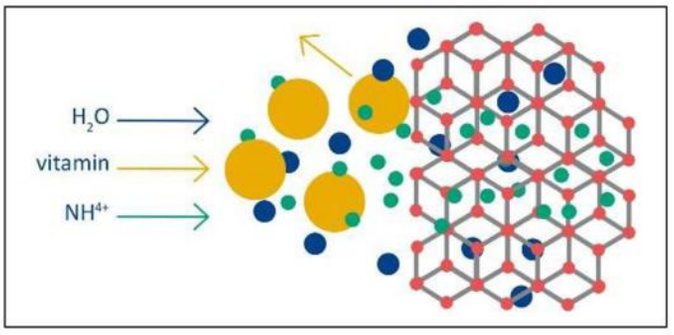
- Insurance for contaminated ingredients

Figure 1 An illustration of the 3-dimensional, honeycomb-like framework of clinoptilolites



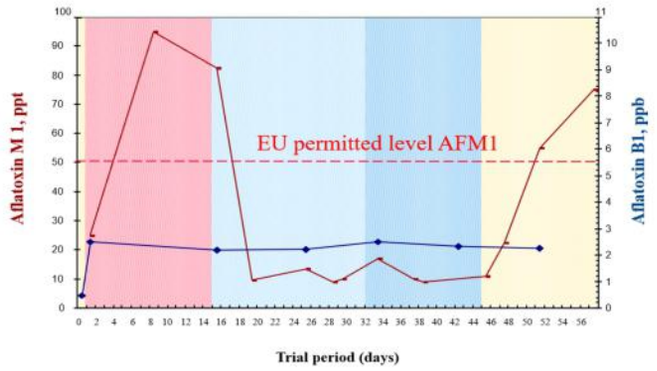
The small pores of clinoptilolite (~400 picometer: pm) help to prevent the unintended binding of nutrients such as glucose (molecular size of 700 - 900 pm) or some of thevitamins (molecular size of 500 - 2000 pm) (Figure 1). In addition, clinoptilolite is not known to interact with macrolides or coccidiostats. Unlike bentonite, especially for poultry, the simultaneous use with coccidiostats other than robenidine is contraindicated with levels of bentonite above 5000 mg/kg of complete feed (EU Regulation No. 1060/2013).

Key benefits of clinoptilolites

- **Aflatoxin binding:** consistent high binding efficacy across a broad pH range (3 – 7) during in vitro studies over multiple years.
- **Proven to bind emerging toxins and bacterial toxins** produced by Clostridium perfringens.
- **Gut support:** ammonia and water binding supports gut health and litter quality in poultry.
- **Feed processing:** improves flow, reduces caking, and supports pellet quality (lower friction, higher durability).

In an Italian study with 300 dairy cows, Excential Toxin A (clinoptilolite) demonstrated a strong Aflatoxin B1 (AFB1) binding capacity by reducing the carry-over of Aflatoxin M1 (AFM1) in milk (Figure 2). During the supplementation of Excential Toxin A at 100 or 200 g/head/day between days 15-32 and 32-45 of the trial, respectively, AFM1 in milk dropped sharply (below the EU legal limit of 0.05 µg/L) and increased again after withdrawal of Excential Toxin A from the feed. The supplementation of mycotoxin binder did not affect the milk quality characteristics (casein, lactose, fat) or milk productivity.

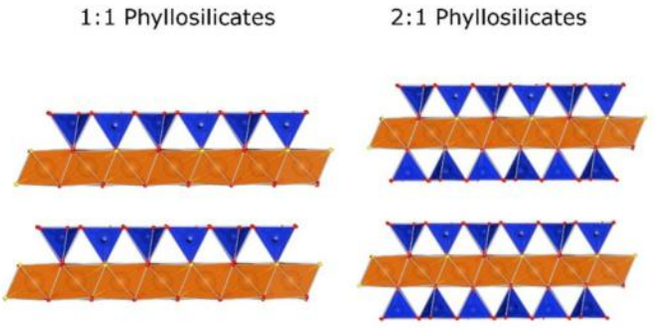
Figure 2. AFM1 levels in milk throughout the 60-day trial *period.*



Phyllosilicates (sheet or layer silicates)

Phyllosilicates are formed by the stacking of tetrahedral silicate sheets and octahedral sheets. The two main combinations are 1:1 tetrahedral and octahedral layers (e.g., kaolinite) and 2:1 tetrahedral and octahedral layers (e.g., smectite) (Figure 3). The stacked sheets create interlayer spaces and an expandable structure, enabling adsorption, ion exchange, and swelling. However, some phyllosilicates are naturally non-swelling. Additional processing, including thermal treatment and ultrafine milling, can optimize these clays for use as mycotoxin binders (e.g., phyllosilicate used in Excential Toxin Plus).

Figure 3 The two main types of phyllosilicate structures (Pavón and Alba, 2021)



Excential Toxin Plus is a synergistic five-component formulation: **(1) clinoptilolite** (tectosilicate) for high-affinity binding of small, highly polar mycotoxins via a rigid 3D pore network; (2) an activated, **non-swelling European phyllosilicate** that supports the adsorption of mycotoxins such as fumonisins as well as bacterial toxins; (3) **yeast cell wall** to extend the binding to toxins with low adsorption affinity, such as zearalenone and ochratoxin; (4) **betaine** to reduce the negative impact of DON on the intestinal integrity and to support intestinal recovery and liver health, damaged by mycotoxins; and (5) **ammonium propionate** to help limit mold growth and mycotoxin formation during feed storage.

A 42-day trial was carried out at the School of Veterinary Medicine of the University of Dakar, Senegal with 600 Cobb 500 broilers. From 11 days of age, the birds received 0, 1, or 5 kg of Excential Toxin Plus (ETP) per MT feed. The birds were fed a corn-groundnut meal-based diet naturally contaminated with aflatoxin (160.4 µg/kg). The supplementation of 1 kg ETP/MT of feed tended to increase the final body weight of the birds by 2.4% ($P < 0.1$) and numerically improved FCR by 5.6%, compared to the control. The supplementation of 5 kg ETP/MT of feed improved FCR by 4.0% with no change in final body weight compared to the control (Table 2).

Table 2 The zootechnical performance of broilers - between 0 - 42 days of age

Parameters	Control	1 kg/MT ETP	5 kg/MT ETP
Body weight (kg)	1.97^{x}	2.02^{y}	1.96^{x}
Average daily gain (g/d)	55.3	57.5	55.5
Average daily feed intake (g/d)	143.0	140.4	139.8
Feed conversion ratio	2.520	2.380	2.420

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In layers, a 12-week study was carried out at the University of Lomé, Togo with a total of 840 Isa Brown old (62 - 74 weeks) and young (47 - 59 weeks) layers with an average body weight of 1.75 kg. The hens received either 0 or 1.5 kg ETP/MT of feed. The supplementation of ETP increased egg production (+8.7% in old hens, P < 0.05; +2.4% in young hens) and improved FCR (−9.2% in old hens; −4.6% in young hens). In old hens, egg weight increased by 4.0 g due to a significant increase in albumen and eggshell weights (P < 0.05) (Table 3).

***Table 3** Effect of Excential Toxin Plus (ETP) on performance and egg parameters of old and young laying hens*

	Old hens		Young hens	
Performance	Control	ETP	Control	ETP
Average daily feed intake (g/day)	112.5	110.9	112.5	110.1
Egg production rate (%)	64.5[a]	70.1[b]	70.1[b]	71.8[b]
Feed conversion ratio	2.881[b]	2.615[a]	2.642[b]	2.520[a]
Egg parameters				
Egg weight (g)	59.4	63.4	59.0	60.8
Yolk weight (g)	15.2	15.6	15.5	15.4
Albumen weight (g)	36.3[a]	39.6[b]	35.6[a]	37.6[ab]
Shell weight (g)	7.9[a]	8.5[b]	7.9[a]	7.7[a]

Row with different superscripts differ significantly ($p < 0.05$).

Not all clay binders perform the same

Each type of clay binder has a specific binding capacity that can vary substantially with the source deposit (even within the same clay family) and the processing applied (chemical, physical, or thermal treatment). As a result, some adsorbents offer broader mycotoxin mitigation, while others show high affinity only for specific mycotoxins.

Quality control and safety assurance system

A comprehensive quality and safety standard for mycotoxin binder selection should start with rigorous raw material qualification, extend through controlled manufacturing, and completed via stringent and continuous monitoring of finished goods. This holistic approach ensures that the final product consistently meets expectations not just for efficacy, but also for safety, and regulatory compliance. Safety parameters e.g. heavy metals, dioxins/dioxin-like compounds needs to be controlled and in line with EU/US directives, according to the market requirements.

Conclusion

Excential Toxin A provides high adsorption of highly polar mycotoxins (including aflatoxins) and emerging contaminants such as enniatins. Excential Toxin Plus extends protection via broader-spectrum adsorption (e.g., fumonisins, zearalenone, ochratoxin, and emerging toxins) and complementary components to support gut function, resilience, and performance under multi-mycotoxins and bacterial toxins challenge. Backed by European quality assurance, Orffa mycotoxin binder product range offer reliable and practical risk mitigation in increasingly complex feed environments.

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Transforming Poultry Health in Nepal: **Launch of "VENGEM" -A low pathogenic avian influenza (H9N2) vaccine**

Low Pathogenic Avian Influenza (LPAI) H9N2 subtype has led to significant economic losses to the poultry industry around the world. These losses are primarily due to a substantial decline in egg production, respiratory illness and complications, and mortality. The H9N2 G1-W lineage infections are been increasingly reported in Nepal and are now widely prevalent across poultry, posing a serious threat to poultry industry

Despite the availability of commercial H9N2 vaccines internationally, their effectiveness in Nepal has remained uncertain due to antigenic differences between imported vaccine strains and the locally circulating field strains. This mismatch often leads to suboptimal protection and increases the risk of vaccine failure under field conditions.

To address this challenge, Ventri Biologicals a leading manufacturer of poultry vaccines in India registered the low pathogenic avian influenza H9N2 vaccine in Nepal. This vaccine was launched and used in India, since December 2024. The introduction of this vaccine in India played a crucial role in strengthening the respiratory disease control programs, reducing economic losses, and improving the livelihoods of poultry farmers.

The technology was developed by ICAR-National Institute of High Security Animal Diseases (NIHSAD), India to control antigenically diverse H9N2 strains prevalent in the region. Under the Government's technology transfer policy, the vaccine technology "Inactivated Low Pathogenic Avian Influenza (H9N2) Vaccine for Chickens" was transferred from ICAR-NIHSAD, Bhopal to M/s Venkateshwara Hatcheries Pvt. Ltd., Pune. This transfer was facilitated by Agrinnovate India Ltd. (AgIn), New Delhi. As part of this initiative, hands-on training on the inactivated H9N2 vaccine was conducted at NIHSAD, Bhopal for 'Ventri Biologicals' production team. Ventri Biologicals established a state-of-the-art Biosafety Level-3 (BSL-3) vaccine manufacturing facility dedicated to avian influenza vaccine production. The facility incorporates advanced process automation, including semi-automatic chick embryo inoculation systems, automated allantoic fluid harvesting, closed-system inactivation, and automated formulation, filling, and labeling processes.

Ventri Biologicals had branded the vaccine as **"VENGEM"**, symbolizing a valuable solution aimed at safeguarding poultry health and enhancing productivity. In future, Ventri Biologicals has plans to expand its Vengem vaccine portfolio with a series of related products, including concentrated formulations and combination vaccines with other viral antigens.

To create awareness and share insights on the VENGEM vaccine, a series of meetings with poultry farmers and veterinary consultants were conducted in Nepal at Kathmandu and Chitwan on 6th and 8th April 2026 respectively. The vaccine was officially introduced by Dr. Prakash Reddy, with a comprehensive presentation on effective disease control strategies, emphasizing how Vengem strengthens flock immunity and minimizes economic losses caused by Low Pathogenic Avian Influenza (LPAI). The sessions included an introductory address by Mr. Chita Sahoo, coordination by Dr. Sambhaji Nimbalkar, and a vote of thanks by Mr. Jivan Kunwar.

The launch of VENGEM marks a significant milestone in strengthening disease control strategies in the poultry sector in Nepal.

Venworld in association with Special Nutrients (USA) Leads Industry Dialogue on Multiple toxin Control with West and Central India Technical Seminar Series

Venky's India Limited's Venworld team known for its innovation and scientific excellence, successfully hosted a series of technical seminars on **"Challenges in Multiple Toxin Control in Poultry"** across Nashik, Pune, and Bhopal from April 6-9, 2026.

Bringing together poultry consultants, veterinarians, nutritionists, and farmers, the seminars provided a strong platform to address the growing threat of mycotoxins and chemical toxins and share practical, science-based solutions for the poultry industry.

At the Pune seminar, **Mr. Deepak Khosla (GM - Sales & Marketing)** emphasized the urgency of tackling mycotoxin challenges and reaffirmed Venworld's commitment to delivering research-driven solutions that safeguard animal health and productivity.

The keynote sessions across all three cities were delivered by **Dr. Joseph Garcia, Technical Director** - Special Nutrients, USA, who shared global perspectives on multi-mycotoxin challenges and effective mitigation strategies. He stressed the importance of selecting toxin binders backed by proven in vivo efficacy, measurable performance improvement, and safety validation.

During his sessions, Dr. Garcia explained how mycotoxin polarity and molecular size influence binder effectiveness and highlighted that clay quality can vary significantly depending on source and geological strata.

He also outlined stage-specific feeding strategies using Venworld solutions for breeders, layers, and broilers—designed to support optimal protection while improving cost efficiency.

To ensure strong on-ground understanding and application, Dr. Vishwas Sagajkar (DGM - Marketing, AHP) further simplified and explained Dr. Garcia's lecture for attendees.

Dr. Garcia also highlighted **Biobantox** and **Biobantox Plus,** emphasizing their advanced binding capabilities and effectiveness across a wide spectrum of mycotoxins, pesticides toxins and endotoxins as well.

The seminar series commenced in Nashik with a traditional lamp lighting ceremony led by Dr. Vishwas Sagajkar and Dr. H.G. Murade (DGM - Sales). The Pune seminar followed with a ceremonial lamp lighting led by Mr. Deepak Khosla, Dr. Vishwas Sagajkar, and Dr. H.G. Murade. The series concluded in Bhopal, where the lamp lighting ceremony was conducted by Dr. Hemant Murade, along with Mr. Sanjay Dubey (Phoenix Hatchery), Dr. Joseph Garcia, and Dr. Shashikant Shiwarkar (AGM - Technical Services), marking the formal inauguration of each event.

Venworld Officials Presence:

Nashik: Mr. Ram P. Ghate (AGM - West Zone), Dr. Amruta Doiphode, Dr. Aditya Mohite, Mr. Vasant Ingale, Mr. Amit Bhavar

Pune: Mr. Ram P. Ghate (AGM - West Zone), Dr. Aniket Sampate (RSM)

Bhopal: Dr. Shashikant Shiwarkar (AGM - Technical Services), Mr. Abhishek Gupte (ZM - Central Zone), Dr Vaibhav Patil (Manager -Nutritionist), Dr. Nilesh Datir (Technical Services), Mr. Shailendra Tripathi (RSM), Mr Pramod Shukla

About Venworld:

Venworld is a trusted name in animal healthcare, delivering high-quality, research-based solutions for the livestock and poultry industry.

From Shrinkage to Strength: Precision Moisture Control in Feed Manufacturing

Mrs. Yamini Sripal, Dr. Sushant Mhatre, Dr. Jayanta Bhattacharyya

Introduction

Optimizing and maintaining the correct moisture level is a critical challenge for the global animal feed industry, as it directly influences both economic viability and animal health. Typically, compound feed is formulated to contain a moisture level around 12%. However, during production, particularly in the summer months, a phenomenon known as shrinkage often occurs, leading to significant moisture loss. This moisture reduction is further intensified by elevated ambient temperatures, fluctuating relative humidity, and heat generated during processing operations such as grinding and pelleting (Feed Technology). These factors can reduce final moisture in finished feed to below 11%, especially under extreme climatic conditions (Moritz et al., 2002; Abdollahi et al.,2013)

Such reductions in moisture content have several adverse implications:

- **Economic Loss:** Lower moisture content results in a direct reduction in saleable product weight, impacting overall profitability for feed manufacturers.
- **Feed Quality Degradation:** Reduced moisture negatively affects pellet durability, leading to increased brittleness, higher generation of fines, and reduced palatability for livestock. This is supported by findings from Hott et al. (2008).

An equally important consideration is the risk associated with improper moisture correction practices. Uncontrolled or excessive rehydration can increase water activity (aw), which reflects the availability of free water for microbial growth. When water activity exceeds critical thresholds (typically aw > 0.70), it creates favorable conditions for the growth of molds and the subsequent production of harmful mycotoxins, including aflatoxins and ochratoxins.

Therefore, maintaining an optimal balance between moisture content and water activity is essential to ensure feed safety, preserve nutritional quality, and sustain processing efficiency, particularly during challenging summer conditions.

The Dynamics of Moisture in Summer

1. Moisture Loss: A Dual-Threat Challenge in Feed Processing

The summer season presents a significant challenge to feed quality and mill efficiency due to accelerated moisture loss. This phenomenon is primarily driven by two key factors: environmental conditions and process-generated heat.

Environmental Evaporation: As ambient temperatures rise, the air's capacity to retain moisture increases, creating a steep vapor pressure gradient. This results in a downward shift in the Equilibrium Moisture Content (EMC), the point at which the moisture content of raw materials stabilizes with the surrounding air. As a result, feed ingredients tend to lose moisture to the environment(y Sauer & Burroughs,1980).

Processing Heat Shrinkage: Natural moisture loss is further intensified during feed manufacturing due to heat generated in operations such as grinding and pelleting. Mechanical friction and conditioning temperatures, typically ranging between 80°C and 85°C, act as a "thermal exhaust," driving additional moisture evaporation. Processing, especially the activities like grinding and pelleting can result in cumulative shrinkage losses of approximately 0.5% to 1.5% of total feed weight (Moritz et al., 2002; Abdollahi et al., 2013).

This loss is critical not only from an economic standpoint but also because it negatively impacts starch gelatinization, a key process that requires adequate moisture for efficient heat transfer during conditioning, ultimately affecting pellet quality and digestibility.

2. Moisture Content vs. Water Activity

While total moisture content (percentage of water by weight) is commonly monitored in feed production, water activity (aw) is a more critical parameter for assessing microbial safety.

- Water Activity (aw): A thermodynamic measure of the "free" or unbound water available to support microbial growth and metabolic activity (Labuza & Altunakar ,2020).
- Total Moisture: A quantitative measure of the total water present in the feed, regardless of its availability for microbial use.

A major challenge arises during summer when water is added directly to compensate for moisture loss. In many cases, this added water does not penetrate deeply into feed particles but instead remains on the surface as "free water."

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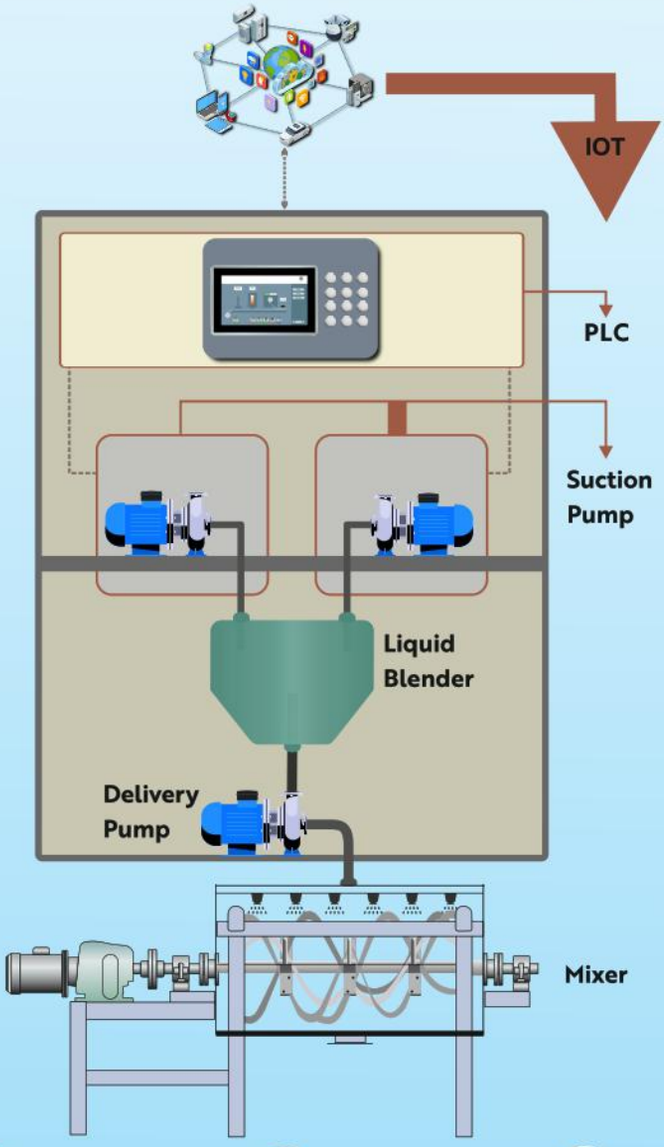

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This localized accumulation significantly increases water activity, often pushing it beyond the critical threshold of aw > 0.70. At such levels, conditions become highly favorable for the growth of xerophilic molds such as Aspergillus and Penicillium. These fungi are known to produce harmful mycotoxins, including aflatoxins and ochratoxins, posing serious risks to animal health and feed safety (Magan and Aldred, 2007). In essence, improperly managed moisture addition can create a situation where water is readily available for microbial growth without being effectively bound within the feed matrix—thereby increasing contamination risks without improving true moisture stability.

The Synergistic Mechanism of Action

The effectiveness of a hydrating solution in feed processing lies in its ability to **modify water behavior,** ensuring deeper penetration, controlled moisture release, and microbial stability. A key factor is the reduction of water's surface tension, which enhances its ability to move beyond the feed particle surface and into internal structures such as starch and protein matrices (Moritz et al., 2002).

Component	Function in Moisture Optimization	Scientific Rationale
Surfactants (Polysorbates, Ethoxylated Castor Oil)	Reduce surface tension (≈72 mN/m to <30 mN/m)	Improve wetting ability, allowing water to penetrate internal capillary structures instead of remaining on the surface
Organic Acids (Propionic & Formic Acid)	Control mold growth and microbial activity	Lower pH and disrupt fungal metabolism, preventing spoilage even at higher moisture levels (Magan & Aldred, 2007)
Glycerol Esters	Stabilize acids and reduce volatility	Provide sustained antimicrobial action during storage and high-temperature processing (EFSA FEEDAP, 2024)

Benefits of Optimized Moisture

Moisture optimization is a crucial, fundamental tool for enhancing physical, operational, and biological outcomes in the feed production chain, moving beyond simple weight recovery. Specifically, the strategic restoration of moisture during summer months provides measurable improvements throughout the entire process.

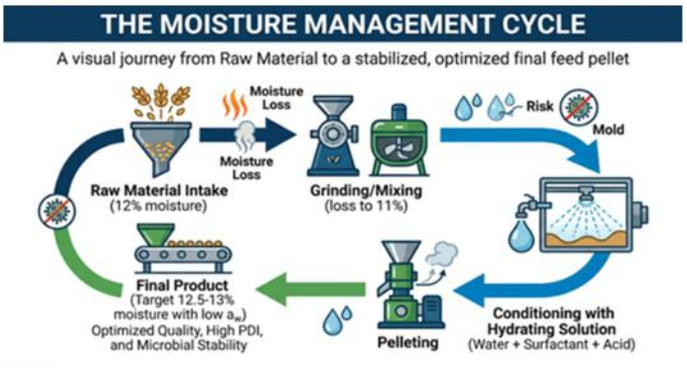
1. Improved Pellet Quality: Maintaining optimal moisture levels is essential for the efficient conversion of feed mash into high-quality pellets.

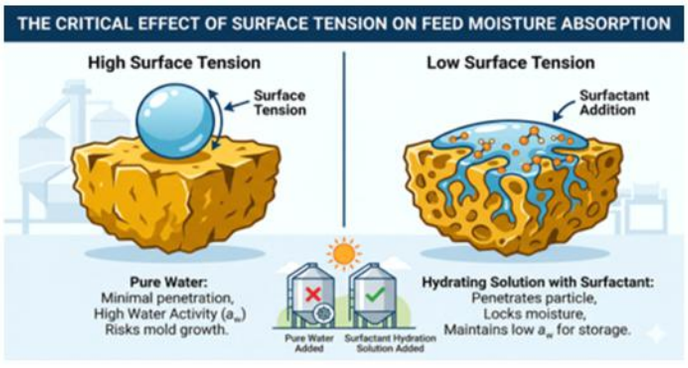
- **Pellet Structure (Starch Gelatinization):** Moisture is a key driver of starch gelatinization, a hydrothermal process where starch granules absorb water, swell, and form a binding matrix. Gelatinized starch acts as a natural "glue," enhancing pellet integrity (Abdollahi et al.,2013)
- **Quality and Durability:** Proper moisture conditioning significantly improves the Pellet Durability Index (PDI). Maintaining moisture levels around 12.5-13. 0% reduces the generation of fines (dust and broken particles). Minimizing fines in pellet feed is critical, as these are often rejected by animals, leading to feed wastage and inconsistent nutrient intake (Moritz et al.,2002)

2. Operational Energy Efficiency and Throughput: Optimized moisture levels improve pellet mill performance by reducing mechanical resistance during processing.

- **Reduced Friction:** Adequately conditioned feed acts as a lubricant, lowering friction between the mash and die surfaces.
- **Lower Amperage and Increased Throughput:** Reduced friction decreases motor load (amperage), improving operational efficiency. Proper moisture optimization can simultaneously increase production throughput (tons/hour) and can reduce energy consumption per ton (Hott et al.,2008).

This dual benefit is particularly valuable during summer, when energy costs and processing challenges are elevated.





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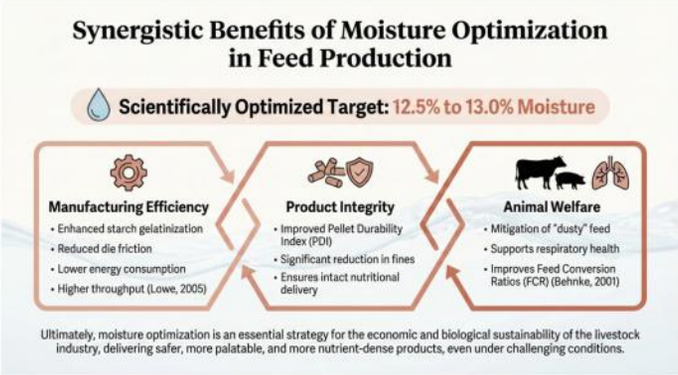
3. Enhanced Animal Performance and Feed Conversion (FCR) : Feed physical quality directly impacts animal intake behavior and nutrient utilization.

- Improved Palatability and Intake: Animals, especially poultry and swine, prefer pellets with uniform texture and minimal dust. Moisture-optimized feed reduces fines, preventing respiratory irritation in birds and improving voluntary feed intake.
- Better Feed Conversion Ratio (FCR): Studies by Moritz et al. (2002) indicate that Animals when fed durable, high-quality pellets exhibit improved FCR (Moritz et al.2002.. Strong pellets ensure consistent nutrient delivery, preventing selective feeding where animals consume larger particles and leave behind nutrient-rich fines.

Conclusion

Optimizing feed moisture during summer is not just about recovering shrinkage—it requires a scientific approach integrating material science, microbial control, and process efficiency. High temperatures and processing heat can reduce moisture below 11%, impacting feed quality and yield (Moritz et al.; Abdollahi et al.).

Simply adding water is ineffective, as it remains as "free water," increasing water activity (aw) and promoting mold growth. The modern approach combines surfactants for better moisture penetration with organic acids (e.g., propionic acid) for microbial stability (Hott et al.). This integrated strategy ensures improved feed quality, safety, and processing efficiency, even under extreme summer conditions.



References will be provided on request

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Northern Region

COMPANY: IB Group
FARMER NAME: Mr. Abhay Kumar Singh

APRIL-2026	Top #1
Farm Type	Closed Shed
State	UTTAR PRADESH
Chicks Placed	9990
Mean Age	39.0
Avg Body Wt	3242
FCR	1.447
cFCR	1.171
Livability%	96.4
Daily Gain	83.1
EPEF	553.9

Eastern Region

COMPANY: IB Group
FARMER NAME: Mr. Epari Rajani

APRIL-2026	Top #1
Farm Type	Closed Shed
State	ORISSA
Chicks Placed	10804
Mean Age	41.0
Avg Body Wt	3399
FCR	1.538
cFCR	1.227
Livability%	97.0
Daily Gain	82.9
EPEF	522.7

Central Region

COMPANY: IB Group
FARMER NAME: Mr. Devendra Kumar Sahu

APRIL-2026	Top #1
Farm Type	Closed Shed
State	CHHATTISGARH
Chicks Placed	11209
Mean Age	47.0
Avg Body Wt	3775
FCR	1.624
cFCR	1.230
Livability%	91.2
Daily Gain	80.3
EPEF	450.9

South Region

COMPANY: IB Group
FARMER NAME: Mr. Allagadapa Murali

APRIL-2026	Top #1
Farm Type	Closed Shed
State	TELANGANA
Chicks Placed	15464
Mean Age	35.0
Avg Body Wt	2500.0
FCR	1.372
cFCR	1.261
Livability%	95.0
Daily Gain	71.4
EPEF	494.6

APRIL-Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age(Days)	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North EC House	9990	39.0	3242	1.447	1.171	96.4	83.1	553.9
North Open House	2722	39.0	2924	1.395	1.190	96.7	75.0	519.9
East EC House	10804	41.0	3399	1.538	1.227	97.0	82.9	522.7
East Open House	2032	39.0	2785	1.410	1.236	96.6	71.4	489.2
Central EC House	11209	47.0	3775	1.624	1.230	91.2	80.3	450.9
Central Open House	2448	45.0	3307	1.578	1.288	95.8	73.5	446.1
South EC House	15464	35.0	2500	1.372	1.261	95.0	71.4	494.6
South Open House	10405	36.0	2359	1.435	1.355	97.6	65.5	445.9

APRIL-Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	CLOSED SHED	UTTAR PRADESH	9990	39.0	3242	1.447	1.171	96.4	83.1	553.9
Flock 2	OPEN SHED	ASSAM	1848	33.0	1556	1.077	1.176	95.8	47.2	419.5
Flock 3	OPEN SHED	PUNJAB	2722	39.0	2924	1.395	1.190	96.7	75.0	519.9
Flock 4	CLOSED SHED	HARYANA	14297	43.0	3474	1.534	1.206	95.3	80.8	501.9
Flock 5	OPEN SHED	UTTAR PRADESH	2013	39.0	2921	1.414	1.209	96.9	74.9	513.4
Flock 6	OPEN SHED	PUNJAB	20092	44.0	3350	1.517	1.217	97.1	76.1	487.1
Flock 7	OPEN SHED	UTTAR PRADESH	10493	42.0	3133	1.474	1.222	93.7	74.6	474.2
Flock 8	OPEN SHED	UTTAR PRADESH	2732	41.0	3081	1.463	1.223	94.7	75.1	486.4
Flock 9	OPEN SHED	UTTAR PRADESH	2876	41.0	3077	1.464	1.225	94.0	75.0	481.8
Flock 10	CLOSED SHED	ORISSA	10804	41.0	3399	1.538	1.227	97.0	82.9	522.7

Effects Of Commercial Premixes Supplementation On Productive Performance Parameters Of Laying Hens

Bharat L Sadarao, Partha P Das, Venket M Shelke, and R Chanthirasekaran
Kemin Industries South Asia Pvt. Ltd., India

ABSTRACT

Layer farmers aim to produce eggs that meet breed standards. However, productivity often declines due to nutrient deficiencies resulting from limited feed availability, rising feed costs, and variation in raw materials. To overcome these challenges, premixes are added to poultry diets to supply essential nutrients, support bird health, and improve productivity. These premixes are formulated cost-effectively to enhance growth, egg production, immunity, livability, and overall product quality.

The present study evaluated the effect of two different premixes on the productivity of laying hens. A total of 30,900 laying hens (29 weeks old) from a single shed were selected and observed over five experimental periods, each lasting five weeks, including one control and four treatment periods.

The experimental design was as follows:

- **T1 (Control):** Diet supplemented with premix supplied by Competitor Company.
- **T2, T3, T4, and T5 (Treatment):** Diet supplemented with premix supplied by Kemin Company (KEPREX™ LR PRO)

Both premixes were added at a rate of 5kg per metric ton of feed, with their nutritional matrix considered during ration formulation.

At the end of the experiment, egg production, feed consumption per egg, mortality, and cost efficiency were evaluated. The results showed that laying hens fed with premix based on **KEPREX™ LR PRO** exhibited higher egg production and better feed efficiency compared to the control group. Additional egg production of 1,22,330; 1,62,830; 1,59,040; and 1,37,360 eggs were recorded during the T2, T3, T4, and T5 periods, respectively, compared to the T1 control period.

Feed consumption per egg during the T1 control period was 135.23g, which was 13.12g, 16.98g, 15.43g, and 13.92g higher than T2, T3, T4, and T5 treatment periods, respectively.

This improvement in efficiency resulted in a cost advantage of INR 3,76,290; INR 5,12,231; INR 4,71,463 & INR 4,01,081 in favor of the **KEPREX™ LR PRO** treatment periods compared to the **competitor product** control period. Consequently, a return on investment (ROI) of 4:1, 5:1, 5:1, and 4:1 was achieved in the **KEPREX™ LR PRO** groups.

Based on these results, **KEPREX™ LR PRO** is a practical and cost-effective solution that ensures uniform delivery of precisely dosed feed additives, leading to improved performance and profitability for poultry farmers.

INTRODUCTION

Poultry farming is the most rapidly developing branch of the agro-industrial complex, which demands better quality of feed and feeding technology for poultry. A lack of feed and rising feed costs stimulate the need to seek opportunities to further increase the biological value of basic feeds and to determine the texture of compound feeds, in which the addition of biologically active substances and feed additives would be the most effective. The premix products in feed industries will have different combinations of multiple feed additives, such as vitamins, minerals, enzymes, acidifiers, surfactants, probiotics, and other feed substances, which play an important role in diets. The Asia-Pacific region currently holds most of the global market share for poultry feed premix and is expected to maintain this position during the forecast period because of improved R&D capabilities and increased consumption of meat and meat-related products, particularly in India. To ensure that birds consume sufficient nutrients, premixes are added to their diets to compensate for shortages caused by changes in the natural concentration of certain nutrients. The premixes are manufactured with cost-effective formulations for healthy growth, productivity, and immunity to attain excellent health, increase livability, and enhance the quality of animal products, among other goals. Therefore, many countries of the world have tended to use premixes instead of protein concentrate in bird diets to get rid of the pathological infections that occur and to ensure that the bird gets its needs of nutrients and vitamins.

Kemin Agrifoods, India, has entered the premix business to cater to feed mill and poultry customers with customized formulations. KEPREX™ is a highly competitive and comprehensive feed premix for poultry feed, offering improvement in the efficiency of premixing at the feed mill and better performance from the birds at the field level.

OBJECTIVE

This study aimed to increase the production of eggs using feed additives-based premix containing "KEPREX™ LR PRO" in compound feeds for laying hens.

MATERIALS AND METHODS

The trial was conducted at a customer commercial layer farm facility in Telangana, India, from 19\09\2022 to 12\03\2023 for 25 weeks. A total of Thirty Thousand and Nine Hundred white leghorn birds (Skylark Bovans) of age 29 weeks were selected from a single shed, which is suffering from the problem of lower egg production performance from peak production age by considering the farm observations, the experimental design was divided into five experimental periods containing control and treatment of five weeks each, along with birds' age **(Table 1)**.

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Mixing Ratio:

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Breeders: 500g-1 kg per ton of feed or as per nutritionist/veterinarian guidance*

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The five experimental periods used were as follows: T1 (control period) - Added the premix "Competitor product" to basal diet formulated by customer and supplied by Aviops Nutraceuticals Company; T2, T3, T4 & T5 (treatment periods) - Added the premix "KEPREX™ LR PRO" to basal diet formulated by Kemin technical person and supplied by Kemin Industries South Asia Pvt. Ltd. Company. Hereafter, for a better understanding of studies, experiment period T1 is referred to as a control period, and T2, T3, T4 & T5 experiment periods will be referred to as treatment periods.

The premix "Competitor product" contains a multi-component toxin binder, multi-component acidifier, liver stimulant powder, NSP degrading enzyme complex, phytase, probiotics, trace minerals, and vitamins as per the latest specification fortified with choline and amla in a free-flowing phyllosilicate base. Whereas the premix "KEPREX™ LR PRO" is a combination of essential supplements and additives that go into poultry layer feed, such as vitamins, organic trace minerals, digestive enzymes (NSP Enzymes, Phytase, and Protease), biosurfactants, hepato-protectants, active microbial, mycotoxin control agents, and antioxidants. The experiment diets have corresponded to the formulated basal diet containing premix products, added at a dose of 5kg per metric ton of feed, implying a premix nutritional matrix of 0.80% crude protein (CP), 80 kcal/kg metabolizable energy (ME), available phosphorous 0.1%, and 1 % digestible amino acids (DAA) in the ration calculation. Before carrying out a series of experiments on laying hens, we studied the chemical and amino acid composition of the T1 premix diet containing "Competitor Product" and T2, T3, T4 & T5 premix diets containing "KEPREX™ LR PRO" using feed formulation software (Brill® Feed Management System, Inc). Diet T2, T3, T4 & T5 were formulated on a digestible amino acid (DAA) basis, keeping lysine as the reference amino acid by using the same feed formulation software. Feed cost was measured by calculating raw material costs. The ingredient composition and calculated analysis of the experimental rations used are presented in **Table 2.**

Periods	Birds Age	Description
T1*	29th-33rd week	Added the premix "Competitor Product" @ 5Kg/MT of feed to a basal diet formulated by the customer
T2	34th-38rd week	Added the premix "KEPREX™ LR PRO" @ 5kg/MT of feed to a basal diet formulated by Kemin
T3	39th-43rd week	
T4	44th-48rd week	
T5	49th-53rd week	

Table 1: *Details of experimental periods.*

**T1 - Control period*

T2, T3, T4 & T5 - Treatment period

Table 2: *The ingredients and chemical compositions of experimental period diets*

Parameters	T1	T2, T3, T4 & T5
Maize	300	300
Broken Rice	200	240
Soybean Meal (45%)	140	125
De-oiled Rice Bran (DORB)	120	90
Groundnut De-oiled Cake (GN DOC)	60	60
Rapeseed Meal	40	40
Stone Grit	123	123
Di-Calcium Phosphate (DCP)	7	10
Salt	3	3
Sodium Bicarbonate	0	1.5
L-Lysine HCL	0.5	0.75
DL-Methionine	1	1.5
Choline Chloride (60%)	0.5	0.5
Competitor product(Premix)	5	0
KEPREX ™ LR PRO (Premix)	0	5
Total	**1000**	**1000.25**
Cost/kg in INR	**24.88**	**24.98**
Nutrient Specification		
Crude Protein (%)	16.86	16.56
Metabolizable Energy (Kcal/Kg)	2442	2545
Crude Fiber (%)	4.45	4.16
Ether Extract (Fat) (%)	2.78	2.67
Calcium (%)	4.06	4.12
Available Phosphorus (%)	0.33	0.38
Digestible Lysine (%)	0.70	0.71
Digestible Methionine (%)	0.34	0.39
Digestible Cystine (%)	0.21	0.21
Digestible Arginine (%)	1.11	1.08
Digestible Threonine (%)	0.50	0.49
Digestible Tryptophan (%)	0.18	0.17
Digestible Isoleucine (%)	0.56	0.56
Digestible Valine (%)	0.67	0.67
Digestible M+C (%)	0.56	0.60
Linoleic Acid (%)	0.94	0.92
Sodium (%)	0.17	0.18
Chloride (%)	0.25	0.23
Potassium (%)	0.71	0.69
Choline (Mg/Kg)	1385	1375
Salt (Na+K-Cl) - DEB (%)	182	188
ME: CP Ratio	156	154

The experiment was divided into five periods of 5 weeks (35 days) each to collect data and to calculate the variables of performance. The productive characteristics that were evaluated are Egg production (%), feed consumption (g), feed consumption per egg (g), and mortality (%). Actual egg production for all five periods was compared with the standard egg production of respective periods as per Skylark Bovans management guide for a better understanding of the effect of premix products on egg production. Feed consumption per period was recorded periodically and used to calculate daily feed intake per hen. Feed consumption per egg was calculated through the ratio between feed intake and egg production. The laying hens were housed in a California cage in an open-house system under the same managerial and hygienic conditions throughout the experiment.

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The birds were fed in the morning and afternoon with feed and water provided on an ad-libitum basis. All experimental protocols were followed by the Kemin technical team based on their standard protocol.

RESULTS

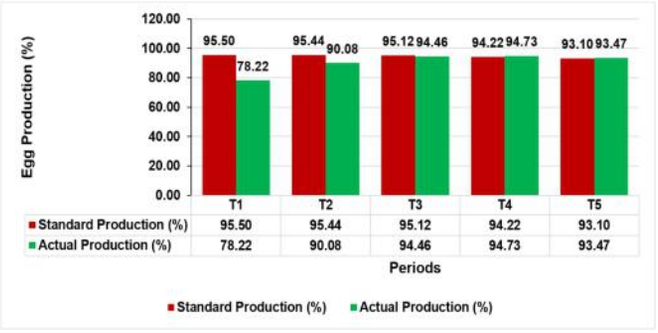
Nutrient analysis of feed formulation:

The nutrient composition analysis of "competitor product" and "KEPREX™ LR PRO" feed formulation is presented in **Table 2.** Results of the nutrient composition study suggest that the metabolizable energy in the T2, T3, T4 & T5 diets supplemented with "KEPREX™ LR PRO" was 2545Kcal/kg, which was 103Kcal/kg higher than in the T1 diet supplemented with "competitor product". The amount of crude fiber was 0.29% lower in "KEPREX™ LR PRO" concentrate than in "competitor product", which had a positive effect on the quality of the resulting product. The amount of digestible methionine (%) as an amino acid in T2, T3, T4, & T5 was 0.39%, which was 0.05% higher than in the T1 diet.

Egg production:

The goal of layer poultry producers in raising laying hens is to achieve the standard egg production recommended by breed manuals. This was clearly shown by the results obtained from the treatment period in the experiment conducted on laying hens. The inconsistent results in egg production were observed when birds received a T1 control period diet. On the other hand, when the treatment period (T2, T3, T4 & T5) diets were fed on top with "KEPREX™ LR PRO" to the birds, not only did it increase the laying rate over the T1 control period, but also surpassed the egg production above the standards set by the breed company during subsequent treatment periods **(Figure 1).**

Figure 1: *Standard versus actual egg production during experimental periods*



Similarly, it was found that the use of the premix "KEPREX™ LR PRO" under T2, T3, T4 & T5 treatment periods contributed to an increase in gross egg production (Table 3). As can be seen from the data in Table 3, 27.45 eggs per hen were obtained in the T1 control period, while 31.63, 33.17, 33.28 & 32.90 eggs per hen were produced in the T2, T3, T4 & T5 treatment periods, respectively, during the experimental period. This parameter in the treatment period exceeded the T1 control period by 13.21%, 17.26%, 17.52% & 16.56% respectively.

Table 3: *Egg-laying capacity of the laying hens during experimental periods*

Parameters	Periods				
	T1	T2	T3	T4	T5
	Competitor product	KEPREX™LR PRO			
Total number of birds	30900	30735	30543	30339	30128
Total number of eggs produced	843640	965970	1006470	1002680	981000
Average egg-laying by one hen	27.45	31.63	33.17	33.28	32.90
Egg produced over T1 (%)		13.21	17.26	17.52	16.56

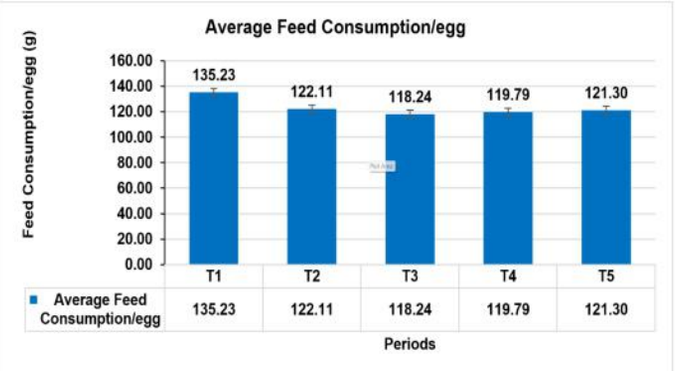
Feed consumption:

It was established that with the use of the premix containing "KEPREX™ LR PRO" in the feed for laying hens of the treatment period, the total feed consumption during the entire experiment was higher by 4, 5, 6 & 5 metric tons in T2, T3, T4, & T5 treatment periods, respectively **(Table 4)**. At the same time, an important indicator in assessing the egg productivity of hens is the feed consumption per egg. The feed consumption per egg in the T2, T3, T4 & T5 treatment periods was 122.11g, 118.24g, 119.79g & 121.30g, which is lower by 13.12g, 16.98g, 15.43g & 13.92g, respectively, than in the T1 control period (135.23g) as shown in **Figure 2.**

Table 4: Feed consumption of the laying hens during experimental periods.

Parameters	Periods				
	T1	T2	T3	T4	T5
	Competitor product	KEPREX™LR PRO			
Total feed consumption (MT)	114	118	119	120	119
Difference in feed consumption (MT)		+4	+5	+6	+5

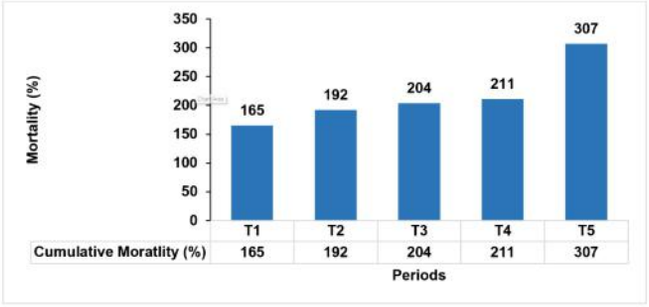
Figure 2: Feed consumption per egg during experimental periods.



Mortality:

The observations regarding mortality in all five experimental periods are presented in Figure 3. The observed mortality pattern was higher in T2, T3, T4 & T5 treatment period diets supplemented with the premix "KEPREX™ LR PRO". The total mortality recorded during the experiment in the T1 control period was 165 birds. At the same time, the calculation of the mortality birds from T2, T3, T4 & T5 was 192, 204, 211, and 307, respectively. The higher mortality during the T5 treatment period was mainly due to the viral outbreak at the farm, which was well taken and prevented by early stepping measures.

Figure 3: *Cumulative mortality during experimental periods.*



Cost efficiency and return on investment (ROI):

The cost efficiency & ROI of the premix containing "KEPREX™ LR PRO" as part of the feed are shown in **Table 5.** Despite the higher feed consumption, mortality, and price of formulated feed in the treatment periods, an increase in the gross production of eggs by 1,22,330; 1,62,830; 1,59,040 & 1,37,360 in T2, T3, T4, & T5 treatment periods, respectively, compared with the T1 control period. This improvement in gross egg production made it possible to obtain an additional net profit of INR 4,89,320; INR 6,51,320; INR 6,36,160 & INR 5,49,440 through the sale of eggs from T2, T3, T4, & T5 treatment period, respectively. As a result, the cost advantage of the use of premix was INR 3,76,290; INR 5,12,231; INR 4,71,463 & INR 4,01,081 in favor of "KEPREX™ LR PRO" treatment periods compared to the "Competitor product" control period. A detailed ROI was carried out for all the treatment period groups, which depicted that supplementation of "KEPREX™ LR PRO" in T2, T3, T4, & T5 provided an ROI of 4:1, 5:1, 5:1, and 4:1, respectively, indicating the economic benefits of the program in layer feed.

Table 5: *Cost efficiency and economic benefits during experimental periods.*

Parameters	Periods				
	T1	T2	T3	T4	T5
	Competitor Product	KEPREX™LR PRO			
Number of birds	30900	30735	30543	30339	30128
Gross egg production	843640	965970	1006470	1002680	981000
Gross egg sale revenues (INR)	3374560	3863880	4025880	4010720	3924000
Net profit/loss from egg sale (INR)		**489320**	**651320**	**636160**	**549440**
Feed consumption (kgs)	114000	118000	119000	120000	119000
Feed cost per kg (INR)	24.88	24.98	24.98	24.98	24.98
Cost of feed consumption (INR)	2836833	2947434	2972412	2997390	2972412
Net profit/loss from feed Intake (INR)		**-110601**	**-135579**	**-160557**	**-135579**
Number of mortality birds	165	192	204	211	307
Cost of mortality birds (INR)	14850	17280	18360	18990	27630
Net profit/loss from mortality (INR)	-	**-2430**	**-3510**	**-4140**	**-12780**
Cost advantage of using "KEPREX™ LR PRO."	-	**376290**	**512231**	**471463**	**401081**
Total Inclusion Cost of KEPREX™ LR PRO (INR)	-	100300	101150	102000	101150
RoI	-	3.75	5.06	4.62	3.97

DISCUSSION

In commercial egg production, production is determined based on the number of eggs laid. In the experiment conducted on laying hens, supplementation with KEPREX™ LR PRO during the T2, T3, T4 & T5 treatment periods improved performance, with more efficient feed utilization and higher egg production. At the same time, the calculation of the feed consumption per egg in the T1 control period was 135.23 g, which is 13.12g, 16.98g, 15.43g & 13.92g higher than T2, T3, T4 & T5 treatment periods, respectively. Nikolaev et al. (2019) reported in reference that egg production is intimately related to the growth and physiological condition of the hens' reproductive organs and is influenced by the rate at which their bodies undergo metabolic processes8. Similarly, the author also observed that the reduction of feed consumption per unit of output is facilitated by balanced rations7. The inconsistent results in egg production as well as feed consumption per egg in the T1 control period diet demonstrated that the nutritional composition provided was not enough to fulfill productive performance levels. This has been well proven through analysis of the chemical composition of the feed formulations using Brill software, which showed lower metabolizable energy values of 103 kcal/kg and digestible methionine in the diet. Apart from this, the available feed raw materials are poor in quality, being deficient in available energy, protein, and minerals, which calls for the use of new, more modern sources3.

Peak performance, expressed in weeks and percentages, will show the health of the farm and flock and should be attained in accordance with breed standards to improve flock economic efficiency. Therefore, despite the higher feed consumption, mortality, and price of formulated feed in the treatment periods, the improvement in gross egg production and lower feed consumption per egg made it possible to obtain an additional cost advantage along with better return on investment (RoI) in favor of treatment periods. As a result, "KEPREX™ LR PRO" is an accessible and inexpensive solution designed to ensure proper distribution of precisely measured feed additives to give greater performance and profitability for poultry farmers at the appropriate time.

CONCLUSION

In conclusion, analysis of the egg productivity of laying hens showed that the birds from the experimental group, in which premix based on "KEPREX™ LR PRO" was used, had a higher egg-laying capacity and better feed efficiency per egg. The addition of feed additive premix based on "KEPREX™ LR PRO" to the formulated diet helped to increase birds' productivity and feed utilization efficiency, which had a beneficial impact on the cost-effectiveness (ROI) of poultry operations.

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Impact of Heat Stress on Layer Production

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Dr. Sharad Durge, PhD
Poultry Technical Manager South Asia
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Heat stress is not just a biological problem in poultry it is a major economic threat to the poultry industry in India and the broader South Asian region. Because this region experiences prolonged summers, high humidity, and increasing frequency of heat waves, the financial impact is recurrent and seasonal (annual) rather than occasional. Heat stress is recognized as a major cause of economic loss in poultry globally and particularly in tropical regions like India (Journal of Thermal Biology, 2019). It leads to losses through reduced production, poor feed efficiency, increased mortality, and compromised egg quality (Wasti et al., 2020). Indian-focused research highlights that modern high-producing poultry genotypes are highly sensitive to rising temperatures, increasing the financial burden annually (Pawar et al., 2016). In practical terms, this translates into thousands of crores (billions of INR) of indirect and direct losses every year across the poultry value chain in India.

Heat stress causes losses through multiple pathways. These are cumulative and often overlap:

Loss in egg production - Reduction in laying percentage (often 5-20% during peak summer), decrease in egg mass and egg weight. Delay in onset of lay. Even a 5% drop in egg production across large commercial farms translates into massive revenue loss annually.

Egg quality losses - thin shells, higher breakage, reduced albumen quality, increased downgraded eggs. These losses directly affect market price realization, especially in organized retail and branded egg segments.

Feed efficiency losses - Birds eat less during heat stress, feed Conversion Ratio (FCR) worsens. Producers spend money on feed but get lower output per unit feed, increasing production cost per egg.

Mortality losses - Heat waves can cause sudden mortality spikes, especially when temperature exceeds 38°C and above. Loss of high-value layer birds results in direct capital loss.

Reproductive and hatchery losses - Reduced fertility and hatchability. Lower chick quality. This affects future production cycles, multiplying economic impact.

Increased health and veterinary costs - Increased disease susceptibility, higher medication and preventive costs.

Infrastructure and mitigation costs - Farmers invest heavily in: Cooling systems (fans, foggers, pads), modified housing and electrolytes and supplements. These adaptation costs add to annual economic burden.

Estimated magnitude of losses in India & South Asia

Industry-level estimates suggest summer losses can reduce profitability by 10-30% in layer farms (industry observations & ICAR reports). Poultry sector is larger and more temperature-sensitive, implying comparable or higher total losses nationally.

Parameter	Impact during summer
Egg production	↓ 5-15%
Egg weight	↓ 2-5 g
Mortality	↑ 2-5%
Feed efficiency	↓ 5-10%
Net profit	↓ 10-30%

For a 100,000-layer farm, this can mean loss of ₹10-25 lakh per season scaled nationally thousands of crores annually. Heat stress losses are increasing due to rising average temperatures, more frequent heat waves, longer summer duration. A recent UN-backed report highlights that extreme heat is already pushing food systems in South Asia toward crisis levels, affecting livestock productivity and farmer livelihoods (news.un.org). This indicates that annual poultry losses are likely to increase significantly in coming years.

Let's understand heat stress in detail as it is one of the most critical environmental challenges affecting commercial layer poultry, particularly in tropical and subtropical regions. It occurs when birds are unable to dissipate excess body heat generated from metabolism and environmental exposure, leading to physiological imbalance. Unlike mammals, poultry lack sweat glands and rely primarily on panting and limited heat dissipation mechanisms, making them highly susceptible to elevated ambient temperatures (Azzam et al., 2019; Estrada-Pareja et al., 2007). In modern high-producing layers, metabolic heat production is already high due to continuous egg formation.

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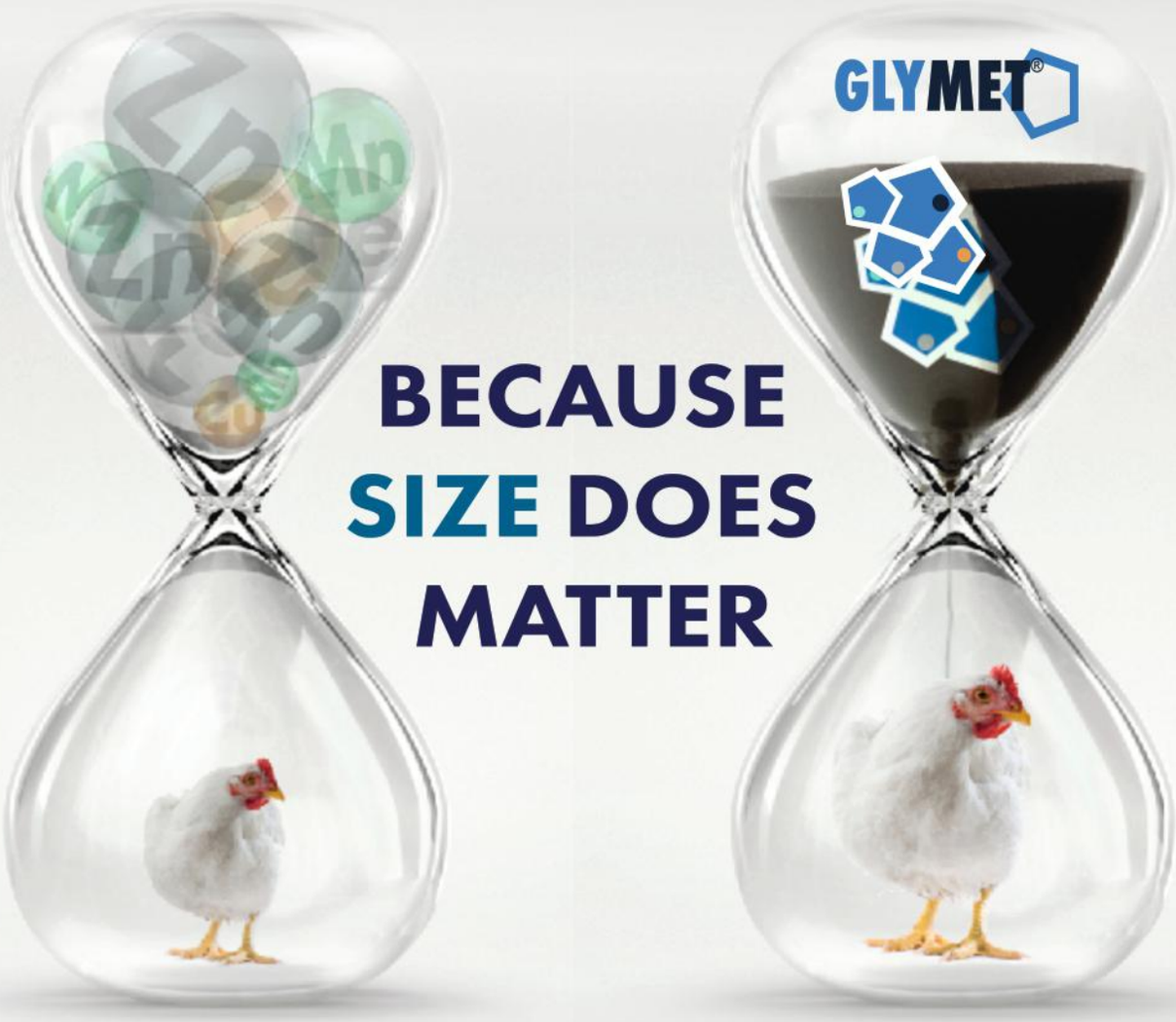

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When ambient temperature exceeds the thermoneutral zone (typically 20-26°C), birds experience stress that negatively affects health, welfare, and productivity. Heat stress not only reduces feed intake and egg production but also induces profound biochemical and physiological alterations, including oxidative stress, endocrine disruption, and organ dysfunction (Mashaly et al., 2004; Khan et al., 2014).

Pathophysiology of heat stress in layers

Heat stress results from an imbalance between heat production and heat loss. Birds attempt to regulate body temperature through panting, vasodilation, and reduced activity. However, prolonged exposure leads to reduced feed intake (to minimize metabolic heat), increased water intake, respiratory alkalosis due to excessive panting and redistribution of blood flow toward peripheral tissues. This redistribution reduces blood supply to vital internal organs such as the liver, intestine, kidney, and reproductive tract, resulting in hypoxia and metabolic disturbances (Rostagno, 2020).

Biochemical changes in blood due to heat stress

Heat stress induces significant alterations in blood biochemical parameters, reflecting systemic metabolic disruption. Energy and Metabolic Indicators, increased blood glucose, triglycerides, and cholesterol, reduced insulin levels and decreased protein metabolism efficiency. These changes indicate altered energy metabolism and stress-induced endocrine imbalance (Khan et al., 2011).

Electrolyte and acid-base imbalance

Decreased Na¤ and K¤, increased Cl¤, development of respiratory alkalosis due to CO_2 loss during panting. Electrolyte imbalance affects nerve function, muscle activity, and eggshell formation (Wolfenson et al., 2001).

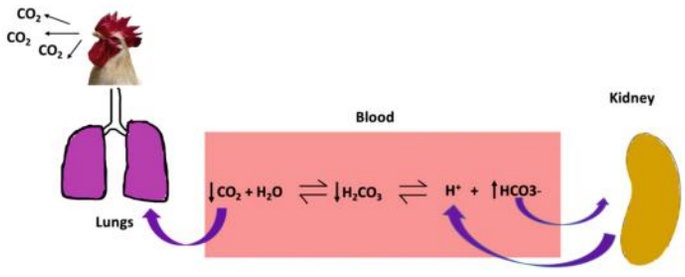

Fig. 1. Schematic diagram showing an acid-base imbalance in poultry under heat stress (Wasti et al., 2020).

Hormonal changes

Increased corticosterone (stress hormone), decreased triiodothyronine (T_3) and altered thyroxine (T_4) levels. These changes reduce metabolic efficiency and growth (Lin et al., 2007).

Hematological changes

Reduced white blood cell count, increased heterophil/lymphocyte ratio (indicator of stress), damage to red blood cell membranes due to oxidative stress. Heat stress weakens immunity and increases susceptibility to diseases (Mashaly et al., 2004).

Mineral and vitamin alterations

Decreased serum calcium and phosphorus, reduced vitamins and trace minerals. This contributes directly to poor eggshell quality and bone metabolism (Azzam et al., 2019).

Oxidative stress and free radical production

One of the most critical consequences of heat stress is oxidative stress, characterized by excessive production of reactive oxygen species (ROS) beyond the antioxidant defense capacity. Reactive Oxygen Species (ROS) generated, superoxide radical (O_2¤), hydrogen peroxide (H_2O_2), hydroxyl radical (OH) and reactive nitrogen species (RNS). These radicals are primarily generated in mitochondria during oxidative phosphorylation and increase significantly under heat stress conditions (Akbarian et al., 2016). Rapid oxidative processes and increased oxidative radicles causes oxidative damage via lipid peroxidation of cell membranes, protein oxidation, DNA damage, enzyme inactivation. Heat stress reduces antioxidant enzymes such as superoxide dismutase (SOD), glutathione peroxidase, and catalase, leading to accumulation of ROS (Emami et al., 2020). ROS production increases significantly in heat-stressed hens, indicating oxidative damage at the cellular level (Lin et al., 2007). Oxidative stress can increase TBARS (thiobarbituric acid reactive substances), creatine kinase (CK) and their elevated levels act as stress biomarkers.

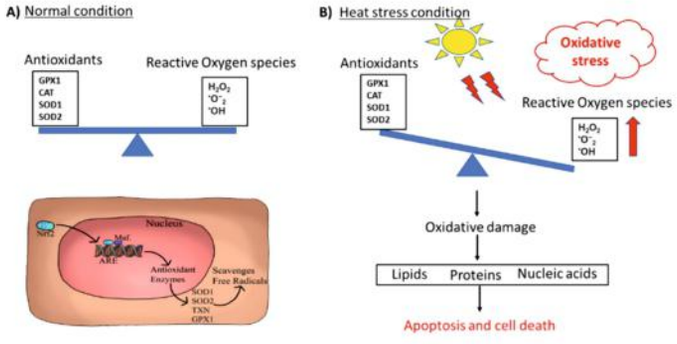

Fig. 2. Schematic diagram showing the redox system. (A) Normal condition, and (B) under heat stress (Wasti et al., 2020).

Organs at risk due to heat stress

Heat stress affects multiple organ systems due to hypoxia, oxidative damage, and metabolic disturbances. Liver - impaired lipid metabolism, reduced synthesis of egg yolk precursors, oxidative damage to hepatocytes. Kidney - Renal dysfunction and fibrosis, increased creatinine levels, impaired excretion of toxins, chronic heat stress has been shown to cause significant kidney damage and reduced albumin levels (Zhang et al., 2024). Intestine - reduced nutrient absorption, increased gut permeability, altered microbiota.

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Reproductive system (Ovary and Oviduct) - reduced follicular development, impaired shell gland function, decreased calcium deposition. Cardiovascular system - Altered blood flow distribution, increased heart rate. Immune organs - suppression of immune response, increased disease susceptibility. Severe heat stress can lead to death due to dehydration, electrolyte imbalance, and organ failure (Khan et al., 2011).

Managemental strategies to reduce heat stress

Effective management is essential to mitigate the adverse effects of heat stress in layer poultry. Environmental Management includes proper ventilation and air movement to reduces heat accumulation, use of fans and tunnel ventilation systems. Cooling systems for evaporative cooling (foggers, misters, cooling pads). Sprinklers for roof cooling. Housing Design - East-west orientation of sheds, reflective roofing materials, adequate spacing between birds (birds placement). Nutritional management - Electrolyte supplemen-tation, Sodium bicarbonate, potassium chloride, maintains acid-base balance. Antioxidants - Vitamin C, Vitamin E, selenium. Enhance antioxidant defence system - antioxidant supplementation improves physiological responses under heat stress (Felver-Gant et al., 2014). Energy-Dense Diets Reduce heat increment of feeding - increase fat content, mineral supplementation calcium, phosphorus, zinc, magnesium - improve eggshell quality and metabolic function. Water management - provide cool, clean water continuously, increase number of drinkers, add electrolytes during peak heat, water intake is critical for thermoregulation and survival.

Feeding Management - feed during cooler hours (early morning, evening), avoid feeding during peak heat, wet mash feeding to increase intake. Health management - vaccination and biosecurity, Monitoring stress indicators (H/L ratio, corticosterone), early detection of heat stress symptoms

Heat stress is a multifactorial challenge that significantly impacts layer poultry through complex physiological, biochemical, and oxidative mechanisms. It induces profound changes in blood biochemistry, including altered electrolyte balance, hormonal disruption, and increased oxidative stress due to excessive production of reactive oxygen species. These changes lead to damage in critical organs such as the liver, kidney, intestine, and reproductive system, ultimately reducing egg production, egg quality, and overall bird health. Effective mitigation requires an integrated approach combining environmental control, nutritional strategies, antioxidant supplementation, and improved management practices. As climate change continues to increase the frequency of heat waves, adopting scientific and proactive measures will be essential for sustaining poultry productivity and welfare.

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ARTICLE

Advanced Summer Stress Management in Broilers

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Summer poses a major challenge to broiler production due to elevated environmental temperatures. Heat stress during this period can reduce feed intake, slow growth, suppress immune function, and compromise overall flock health. If not managed effectively, it may lead to poor flock uniformity, increased mortality, reduced productivity, and substantial economic losses. A **comprehensive, stage-wise management program** is therefore essential to sustain performance during hot weather.

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1) Brooding Management (0-14 Days)

The brooding phase is the foundation of broiler performance. Strong brooding management supports early chick vitality, better body weight gain, and improved feed efficiency. In summer, chicks are highly sensitive to temperature fluctuations. **Excess heat during the first week** can quickly cause dehydration, leading to weak chicks, uneven growth, and long-term uniformity issues. Maintaining optimal brooding temperature and comfort is critical.

Key Practices

- **Temperature control:** Maintain target brooding temperatures and monitor chick behavior for comfort cues (even distribution, active movement, steady feeding and drinking).
- **Ventilation from day one:** Ensure adequate air exchange to remove heat, moisture, and ammonia—without creating direct drafts on chicks.
- **Extra floor space:** Compared to cooler seasons, providing slightly more space helps reduce heat buildup and improves chick comfort.
- **Chick equipment only:** Use chick feeders and drinkers to ensure easy, continuous access to feed and water.
- **Controlled brooding systems:** Electric or gas brooders provide more consistent heat distribution and better regulation than uncontrolled heating methods.
- **Avoid overcrowding:** High stocking density intensifies heat stress and reduces access to feed and water.

Early Heat-Stress Signs in Chicks

Watch closely for:

- Panting
- Dullness or lethargy
- Wings spread away from the body
- Reduced feed intake
- Chicks moving away from heat sources and clustering near cooler areas

Immediate Corrective Actions

If stress signs appear:

- Increase ventilation and airflow without chilling chicks.
- Keep side curtains appropriately open to release trapped heat and ammonia.
- Ensure unrestricted access to cool, clean water to prevent dehydration.

2) Growing Management (15 Days to Market)

As broilers grow, their ability to tolerate heat declines. Larger birds produce more metabolic heat and are more susceptible to heat stress, making space, resource access, and handling practices especially important.

Key Practices

- **Provide adequate floor space early:** Expand space at the earliest to prevent overcrowding later.
- **Resource availability:** Maintain enough feeders and drinkers to reduce competition and ensure uniform intake.
- **Improve uniformity:** Separate weak or smaller birds to support growth and reduce stress from competition.
- **Schedule stressful activities wisely:** Vaccination and routine procedures should be done during cooler hours (early morning or late evening).
- **Minimize handling of heavy birds:** Higher body weight birds are more vulnerable— avoid weighing, moving, or catching during peak daytime heat to prevent heat exhaustion and mortality.

3) Feeding Management

High temperatures reduce feed intake, directly affecting growth rate and feed conversion. Feeding programs must aim to maximize intake during cooler periods and reduce metabolic heat production during peak heat.

Practical Feeding Strategy

- **Feed during cooler hours:** Offer most of the feed early morning and late evening, when birds are more active.
- **Midday feeder management:** During peak heat, feeders may be temporarily lifted or feeding controlled to reduce metabolic heat production and provide birds more resting space.
- **Adequate feeder space:** Ensure sufficient feeder access to support uniform consumption across the flock.
- **Use structured feeding approaches when needed:** Controlled or phase feeding can help optimize nutrient utilization and reduce heat load, particularly in high-risk flocks.

4) Water Management

Water is essential for thermoregulation and maintaining electrolyte balance during summer. In heat stress conditions, water intake rises sharply—so quantity, quality, and temperature become critical.

Key Practices

- **Continuous supply:** Ensure 24/7 access to clean, cool water.
- **Manual systems:** Replace water multiple times daily to keep it fresh and cooler.
- **Nipple systems:** Flush lines regularly to prevent water warming in pipelines.
- **Water quality focus:** Low groundwater levels can increase contamination risk. Routine water sanitation and monitoring are essential.
- **Acidification:** Water acidifiers can help maintain hygiene by lowering pH and supporting gut health.
- **Supportive supplementation:** Electrolytes, probiotics, and Vitamin C through drinking water can improve hydration, reduce oxidative stress, and enhance resilience under heat stress.

5) Shed Management

Housing and environmental control can significantly reduce heat load on birds. The goal is to limit radiant heat, improve air exchange, and enhance evaporative cooling where appropriate.

Cooling and Housing Practices

- **Roof insulation:** Use locally available materials (paddy straw, coconut leaves, etc.) to reduce internal temperature.
- **Protect water tanks:** Shade external tanks and cover them with wet gunny cloths to prevent water heating.
- **Cooling interventions:** Use roof sprinklers, foggers, or misting systems to help regulate shed temperature.
- **Wet curtains:** Hang wet gunny curtains along sidewalls to enhance evaporative cooling.
- **Reduce direct sunlight:** Ensure proper shed orientation and shading to minimize radiant heat entering during peak hours.

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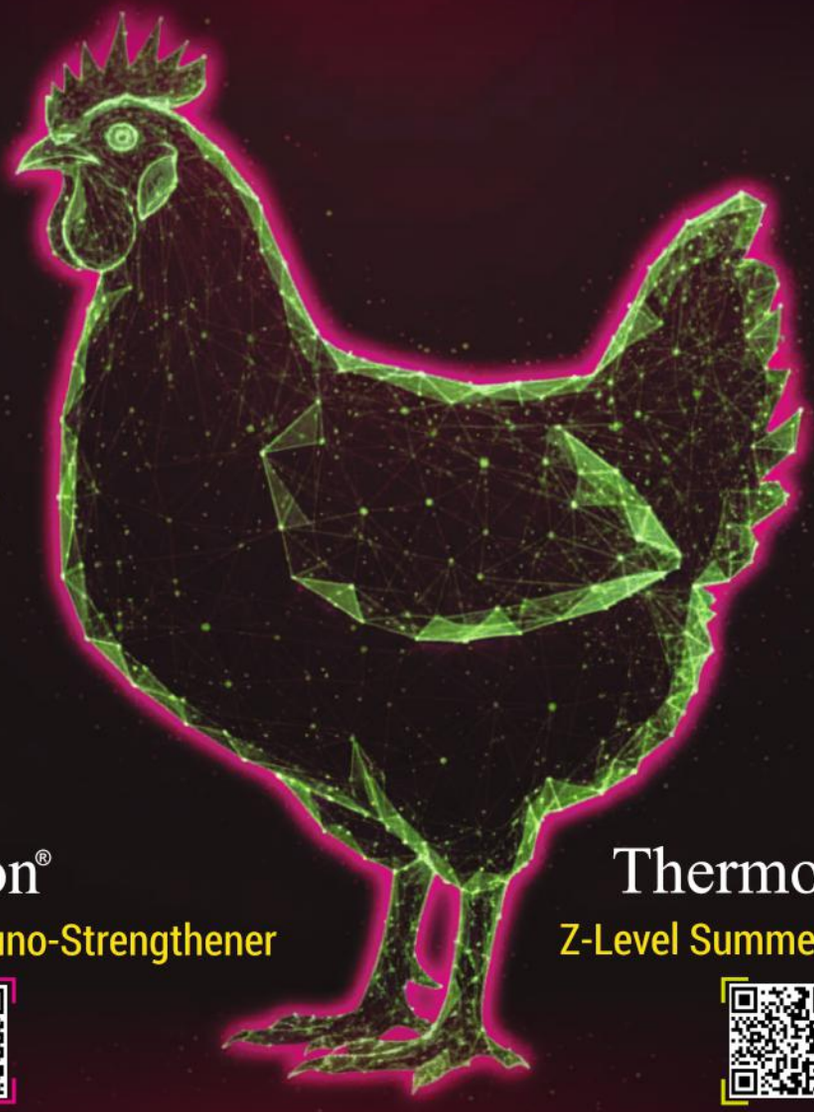

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VIV Select India 2026

A Powerful First Edition Puts India at the Heart of the Global Animal Feed-to-Food Conversation

The first-ever VIV Select India wraps up with industry-wide enthusiasm and a clear mandate to return

VIV Select India held its inaugural edition from April 22-24, 2026 at the Yashobhoomi Convention and Expo Centre in New Delhi, marking the first time the globally established VIV Worldwide platform has convened on Indian soil.

Organised by VNU Exhibitions Europe, the international division of Royal Dutch Jaarbeurs, in strategic partnership with the Poultry Federation of India (PFI), the three-day B2B exhibition opened a long-term platform commitment to India's animal protein and livestock industry.

The show welcomed 7,100 professional visitors from37countries, 101 industry leaders,23 VIPs and dignitaries from national and international government bodies, and 130 exhibitors spanning poultry production, dairy technology, animal health, feed ingredients and additives, breeding and hatching technology, food engineering, aquaculture, and agri-tech. Participation which filled the 10,000 sqmexhibition floor came from companies across Europe, the Middle East, Asia, and South America reflecting India's growing importance as a destination market for global innovation in animal protein production. The show was covered by 39 members of the local press.

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Over the first two days, the conference programme highlighted sessions in Advances in Poultry Sector and Advances in Biologicals and Vaccines with speakers coming from leading Indian and international companies and institutions.

Where Indian Industry and Global Innovation Converged

Exhibitors at the inaugural edition included Big Dutchman, JBT Marel India, Viscon Hatchery Automation, De Heus Animal Nutrition India, FAMSUN, and Venky's India, Biozene, ASM Process Automation, Sanzyme Biologics, Optima Poultry and many other Indian and international companies. The exhibition floor offered solutions across automation, precision farming, animal health, biosecurity, processing technology, and digital tools designed for the specific production realities of the Indian market.

The show opened with a formal inaugural ceremony attended by senior government and industry figures, including H.E. Ms. Marisa Gerards, Ambassador of the Netherlands Embassy in India, Nepal & Bhutan; Mr. Jeroen van Hooff, President and CEO, Royal Jaarbeurs and VNU Group; Mr. Mahipal Dhanda, Hon'ble Education Minister, Government of Haryana; Mr. Ranpal Dhanda, President, PFI; Dr. S.K. Dutta, Joint Commissioner (NLM), Department of Animal Husbandry and Dairying, Government of India; and esteemed dignitaries from PFI. The ceremony was moderated by Dr. Jeetendra Varma.

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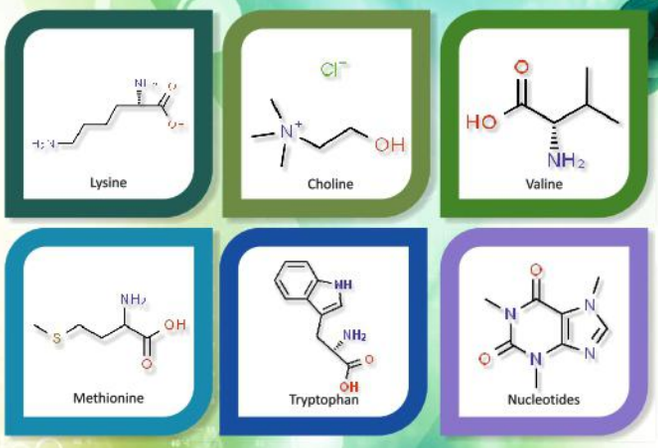

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VIV Square served as the hub for professional dialogue throughout the three days, with sessions addressing poultry production, dairy advancement, animal health, nutrition strategy, processing performance, and the integration of automation and AI in livestock management — all grounded in the challenges and opportunities facing producers in India.

A highlight was the Dairy Conference, which drew strong attendance and brought together industry leaders, farmers, and innovators for a dedicated day of dialogue. Discussions ranged from India's dairy sector within a global context to strengthening Indo-Dutch partnerships aimed at supporting medium-sized dairy farmers, generating significant engagement and reflecting the collaborative momentum shaping the sector's future.

Patrick van Rooij, Project Manager of VIV Select India, shares, "The response from the Indian industry to this first edition has been something we are genuinely proud of. Producers, integrators, technology providers and policymakers came together with a shared intent: to exchange, to learn, and to build. What we saw on this show floor gives us every confidence that this platform will grow into something of lasting value for the sector."

Arriving at India's Moment of Transformation

India's animal protein sector is undergoing rapid change. As the world's largest milk producer and one of the fastest-growing poultry markets globally, the country is at a point where scale must be matched by efficiency, resilience, and smarter use of technology. VIV Select India was conceived as a long-term platform to support that transition, connecting the full feed-to-food value chain in a way that reflects the specific needs and structure of the Indian market.

The partnership with PFI has been central to the event's foundation. As PFI President Ranpal Dhanda noted ahead of the show, the collaboration is designed to help Indian producers access cutting-edge technologies and international best practices, while showcasing India's productionpotential to the global community — a two-way exchange the inaugural edition actively delivered upon.

Rajeevan Vattakat, VIV Worldwide representative in Indiahappily says, "VIV Select India 2026 has exceeded all expectations and delivered a quality show which the Indian animal protein industry was looking for many years. There were quality visitors, an excellent atmosphere to discuss business opportunities and moreover, attendees from India and abroad."

First Edition Sets the Foundation for Future Growth

The breadth of participation at VIV Select India 2026 from domestic producers and national associations to international exhibitors and government stakeholders reflected a genuine appetite for a dedicated, high-quality platform of this kind in India.

Jeroen van Hooff, President and CEO of Royal Dutch Jaarbeurs and VNU Group, remarks, "VIV Worldwide has spent over four decades building trust with the industries and markets it serves. We do not enter a market for a single edition — we enter to build something durable. India is one of the most significant animal protein markets in the world, and the response to this inaugural edition reinforces our belief that this is the right platform, in the right place, at the right time. VIV Select India is a long-term investment in the Indian industry, and we are proud to stand alongside the Poultry Federation of India and the broader sector in that commitment."

The VIV Worldwide team and its partners extend their gratitude to the exhibitors, visitors, speakers, industry associations, and government stakeholders whose participation made VIV Select India 2026 a strong and purposeful debut.

Building on the strong rebook interest of the current exhibitors and the wider industry support, the next edition of VIV Select India is set to take place from April 21-23, 2027, in New Delhi.

Visit india.viv.net for more information on VIV Select India and viv.net for all the shows under the VIV Worldwide portfolio.

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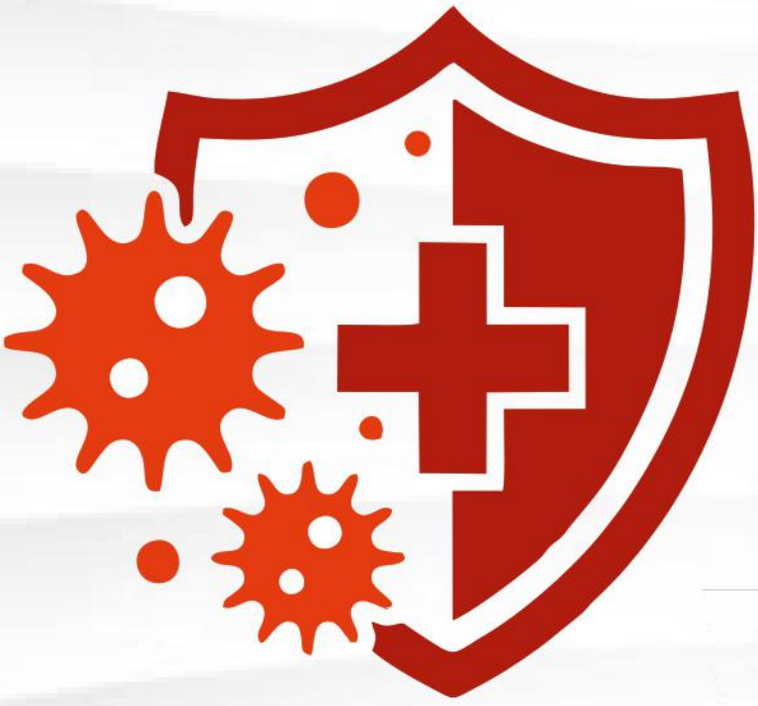

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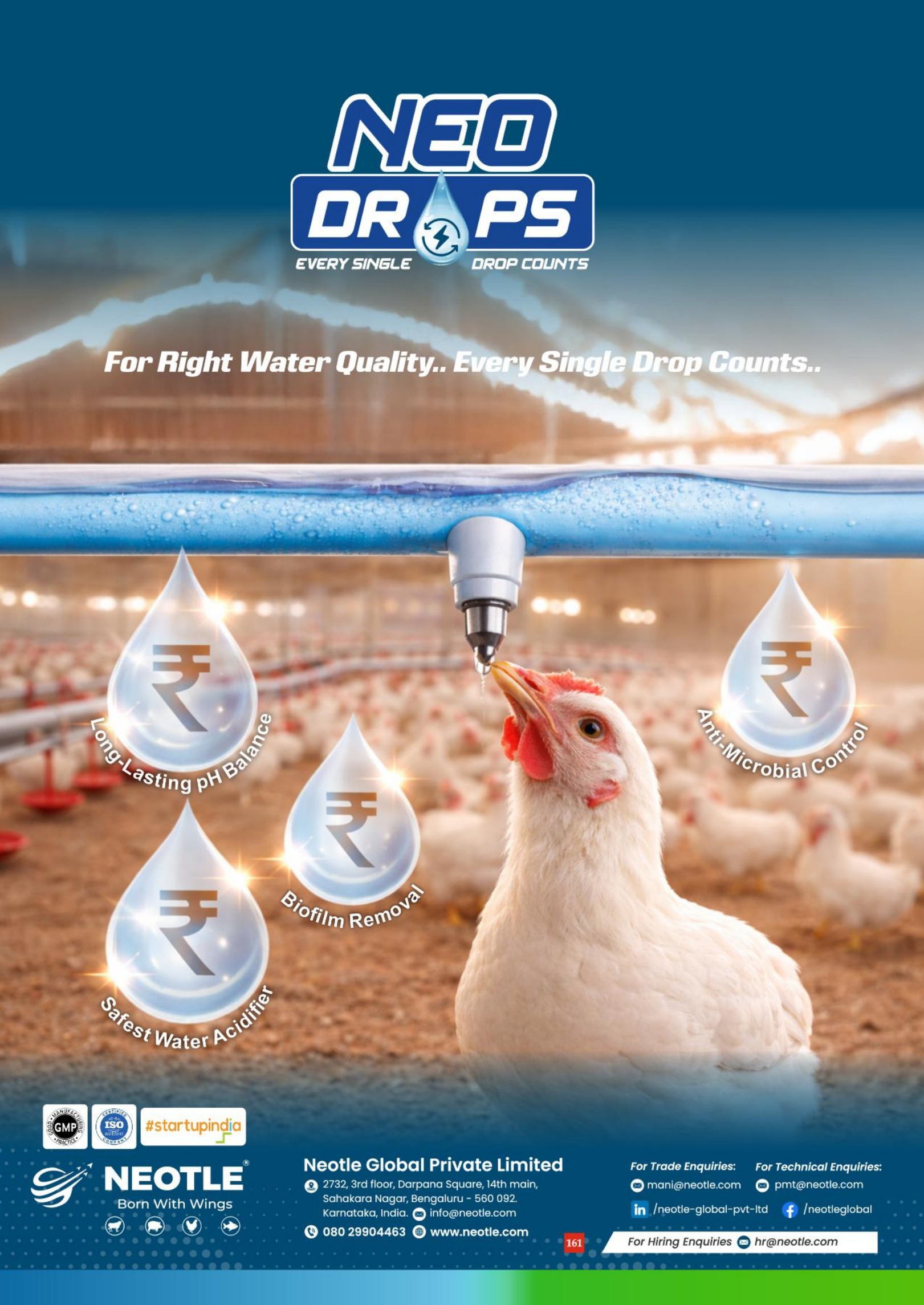
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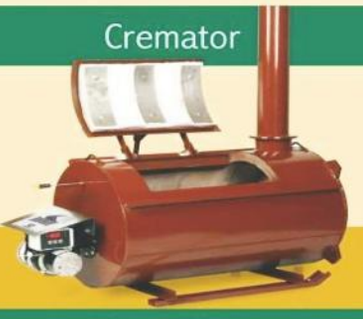

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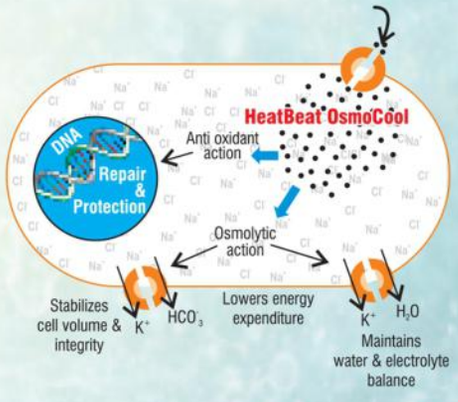

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IPEMA–Poultry India Strengthens Global Collaboration at NIPOLI Expo 2026, Nigeria

The Indian Poultry Equipment Manufacturers Association (IPEMA) – Poultry India marked a successful participation at the NIPOLI Expo 2026 held in Ibadan, Nigeria, further strengthening international collaboration and trade relationships within the global poultry and livestock sector.

Led by IPEMA President Uday Singh Bayas, the delegation actively engaged with international stakeholders, industry leaders, policymakers, and agribusiness professionals during the expo. The participation showcased India's growing capabilities and innovation-driven advancements in poultry equipment, and allied sector.

Recognized as one of West Africa's leading livestock and agribusiness trade platforms, NIPOLI Expo 2026 brought together global & regional exhibitors, investors, feed manufacturers, veterinarians, researchers, and policymakers under one roof. The event served as a platform for knowledge exchange, networking, business partnerships, and exploring opportunities across the African poultry and livestock ecosystem.

Nigeria's poultry sector continues to emerge as one of Africa's strongest agricultural growth drivers, valued at approximately USD 4.2 billion and contributing significantly to the country's agricultural GDP. With over 180 million birds, annual production exceeding 1.5 million metric tons of chicken meat, and approximately 15.8 billion eggs annually, the market presents immense opportunities for collaboration, technology exchange, and sustainable growth.

The Middle East and Africa poultry market, valued at USD 26.7 billion in 2024 and projected to reach USD 35.57 billion by 2033, further highlights the increasing global importance of the region in poultry and livestock development. Nigeria's strategic position as a gateway to Africa also opens broader avenues for trade and cooperation with emerging markets across the Middle East and the African continent.

The IPEMA-Poultry India delegation had the privilege of interacting with several distinguished dignitaries and honorable guests at the event, including:

- Alhaji Yinka Lawal - Chairman, PAN Ogun State
- Hon Dr Moruuf Akinwande – Chairman, Oyo State Fire Service
- Dr Segun Makanjuola - Convener, NIPOLI Expo

Speaking during the event, Mr. Uday Singh Bayas, President, IPEMA-Poultry India, stated:

"Participating at NIPOLI Expo 2026 reflects IPEMA's continued commitment towards global collaboration, knowledge exchange, and sustainable poultry industry growth. Africa, particularly Nigeria, presents significant opportunities for innovation, investment, and long-term partnerships in the poultry and livestock sector.

Through this engagement, we are advocating stronger trade relationships with Nigeria and other African countries, while also exploring mutually easier pathways for collaborative trade and industry partnerships.

During the visit, the delegation closely interacted with authorities and stakeholders in Nigeria to help streamline visa support and hospitality coordination, enabling a smoother and more welcoming experience for delegates and visitors from the region attending Poultry India Expo in India, as well as facilitating better participation experiences for future Indian delegations visiting the region."

The participation also reinforced Poultry India's vision of creating stronger global industry linkages while promoting India as a trusted partner in poultry technology, equipment manufacturing, and livestock innovation.

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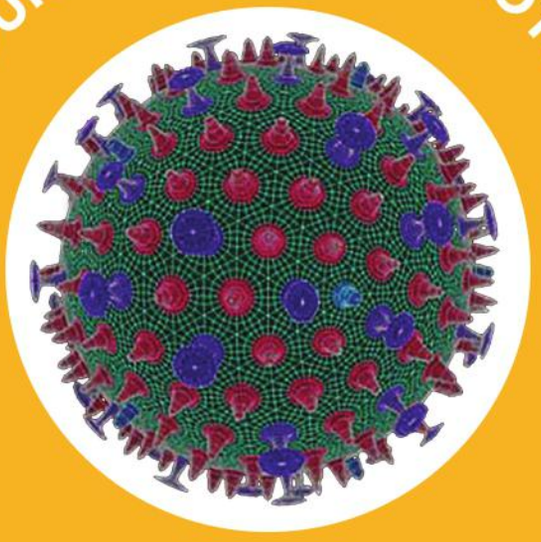

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IPEMA-Poultry India extends its sincere appreciation to the organizers of NIPOLI Expo 2026 and all industry stakeholders for their warm hospitality and collaborative engagement during the event.

The association also cordially invites global industry stakeholders, exhibitors, professionals, and delegates to participate in the 18th edition of Poultry India Expo 2026, scheduled on 25th, 26th & 28th November 2026, with Poultry Knowledge Day on 24th November 2026, at HITEX Exhibition Centre, Hyderabad, India.

About IPEMA - Poultry India:

IPEMA (Indian Poultry Equipment Manufacturers Association) is the organizer of Poultry India Expo, one of South Asia's largest and most influential poultry exhibitions and knowledge-sharing platforms, bringing together industry leaders, innovators, researchers, and professionals from across the globe.














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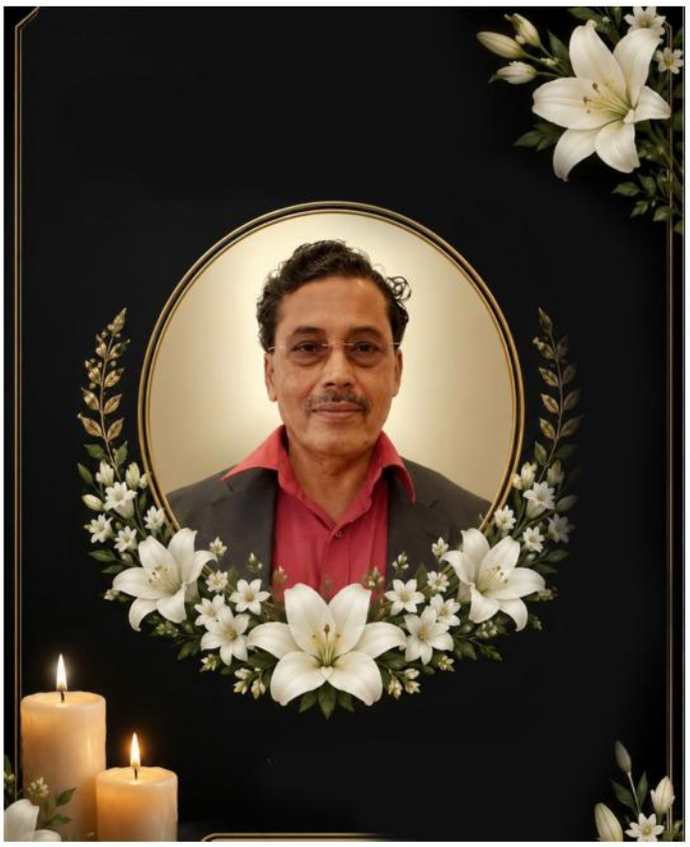
A tribute
Prof. Dr. G. Gevegowda



On 12th May at 9:33 PM received a call from a friend, Dr Bhadtrapur, to inform the sad news. While I was trying to get it confirmed from my source, at 9:42 PM, we received a shocking & unbelievable message in our IVPI's EC WhatsApp group from Prof. Devegowda Sir's mobile number

"Hello friends, with deep sorrow regret to inform you all that my husband, Dr G. Devegowda, passed away a while ago."It was from Sir's wife, Smt. Manjula Ma'am. Immediately at 9:46 PM, we, the EC members, had a group video call with Ma'am & confirmed the unbelievable & had the last Darshan of his face.

"Prof. G Devegowda Sir had progressive muscular degeneration issue for the last few months, which restricted his physical movement and made him almost bedridden for 15 days'. On 10th May at 10:45 AM local time,he breathed his last in Texas.

We lost our teacher, mentor and guiding light in that news from Texas on that unforgettable night.

Dr Harsha Kumar Shetty

A great teacher never truly dies; he lives on in the minds and hearts of their students and the poultry industry.May his soul rest in peace.

Dr Prakash Reddy

The contribution of Dr Devegowda to the poultry industry is truly immense. His contributions, knowledge, and dedication have inspired generations and helped shape the growth of the industry in countless ways. He will always be remembered with deep respect and gratitude. His passing is a great loss to the entire poultry fraternity. Heartfelt condolences to his family and all who had the privilege of knowing him. May his soul rest in peace.

Dr Pradeep Linge

He would have lived a few more years here in Bangalore … It's still in my eye his last speech at IVPI at Hilton … how energetic he was….

Dr Yadunandan

I am delighted, Dr Malathi, that you have come back to the Home Department. I am confident that you will do wonderful work and bring back the glory of the Poultry Science Department. Wishing you great success and all the very best.

Dr G Devegowda wrote to **Dr Malathi** on her transfer back

Very sad news, I lost my longtime associate, friend Om Shanthi Om!!! May his soul rest in peace

Dr RN Srinivas Gowda

Really shocking news about the sad demise of Dr GD Sab. His contributions to the Poultry Sector are enormous. He lived his Scientific life to the brim of satisfaction. As a person, Dr GD Sab was an extraordinary personality. A quiet, strong and determined person Prof. GD Sab was. May His Soul Rest In Peace. His sorrowing 3-year Junior Veterinarian.

Dr BSV Reddy

My deepest condolences for the loss of *Dr. G. Deve Gowda* He truly was a legendary figure in India's poultry industry: President, Institution of Veterinarians of Poultry Industry (IVPI). Worked with the Veterinary University and was a strong voice for poultry veterinarians and farmers. Advocated for the nutritional value of eggs and poultry, calling the egg "the energy centre" that provides key nutrients to the body. Stood up for small poultry farmers, especially when misinformation threatened their livelihoods.

His contributions to veterinary education, IVPI, and the poultry sector have shaped the industry and helped countless students, vets, and farmers across India. Losing a teacher and mentor like him leaves a huge void.

Dr. Muniyappa

Extremely pained to learn of the sad demise of our beloved teacher. He was an exceptional human being who shared a deep personal bond with his students. His immense contributions to the poultry industry brought great recognition to veterinarians across the sector. His loss is profound and will be deeply felt by all of us.

Dr Raghavendra Bhatta

Deeply saddened to hear about the passing of Prof. Dr G. Devegowda, sir.For many of us from Veterinary College, Bengaluru, he was not just a Professor of Poultry Science, but a true mentor, guide, institution builder, and a fatherly figure who shaped countless careers in the poultry industry. What made Sir truly exceptional was not only his immense knowledge but the simplicity with which he taught. He had a rare ability to explain poultry science in such a practical and understandable way that even an average student would gain confidence and clarity. He made people believe in themselves.

Personally, sir always encouraged me immensely in my journey as a veterinarian entrepreneur. Whenever he visited my feed mill, he would appreciate every small effort with genuine happiness and encouragement. During difficult phases in business, when I myself was uncertain, Sir would confidently say that I would bounce back again. Sometimes, he had more confidence in me than I had in myself. I can still hear him calling me "Dr Babu… good good…" with that warm smile of his.

Even after retirement, the way he built IVPI to such a respected level and connected poultry professionals across states with simplicity, ethics, positivity, and inclusiveness was truly inspiring. He respected everyone equally, encouraged young veterinarians wholeheartedly, and carried the poultry industry forward with dignity and vision.

People like Devegowda sir do not leave us completely. They continue to live through the confidence, values, courage, and guidance they have instilled in thousands of students and poultry professionals.

Dr. Suresh Babu

Well said,Suresh Babu. he will always remain with us and inspire us to do better. The biggest strength of a professor is keeping things simple. He never liked anyone talking lightly about the Indian poultry industry.

Dr Swamy

Deeply shocked to hear about this. Sir was an institution himself and made sucha vast, never forgettable contribution to the sector and society at large. Heartfelt Condolences. MaySir's departed soul rest in eternal peace. Om Shanti

Dr Anjan Goswami

Our heartfelt condolences to his family, colleagues, and all who had the privilege to learn from him. His legacy will endure through the many lives he shaped. Sir's guidance, wisdom, and dedication to his students and professional colleagues would leave a lasting impression. Om Shanti

Dr SBN Rao

Sad to know Demise of a distinguished professor of Eminence who has contributed immensely to the growth of the Poultry Sector across the country. May god bless the departed soul to rest in peace and pray to bestow the strength to withstand the untimely demise of the Great Soul. Om Shanthi.

Prof K. Narayana Gowda, Former VC, UAS, Blore

Very sad and extremely painful news.I lost a great teacher and a fatherly figure.My first poultry and pet clinic was inaugurated and blessed by him in the year 1993.Down to earth and always supportive.We lost a great poultry scientist, but his legacy continues forever through many of his students.My deepest condolences to the bereaved family.

Shashibhushan

A big shocking news to know our dearest person is no more physically. But he has lived in all our hearts as long as we breathe. He is one of the main people who brought respect to our profession.Great mentor for all his students.I am an Ekalavya shishya of prof G Devegowda. We should always cherish his memories and carry forward his comments to the profession and the nation.

Dr SV Rama Rao

Great human being; his commitment and development of the profession, and his service legacy will always be remembered and remain forever. May the great soul rest in peace.

Dr Muniyalappa

With my beloved professor & Guide. It was very shocking & unbelievable sad news. May his soul rest in peace. He was my Guide in 1992 & one of his favourite students.I lost my mentor.

Dr Sreenivas PT

The sudden demise of our Dearest Professor Dr Devegowda Sir is very sad. I pray his soul rest in peace.Very affectionate, humble always, loving, caring, very proud of his students, and the poultry industry has lost a doyen, but he continues to be with us, if not physically. IVPI and KPFBA, in association with KVAFSU, can think of holding a lecture series in his memory, which would be a real tribute to our dear teacher and mentor to most of us

Dr NKS Gowda

Deeply saddened by the demise of respected Professor Dr G. Devegowda Sir.A visionary teacher, scientist, and mentor whose contribution to the poultry and academic world will always be remembered with great respect.

Dr Santosh Ire

I have no words to say at this most tragic moment of life. Prof. Devegowda was much more than a guide to me, a true mentor and next only to my father. My heart is breaking... may the almighty bless the noble soul with Sadgati. Om Shanthi!!!

Dr MVLN Raju

I wanted him to be the Keynote speaker for the WVPA Asia Meeting in Oct this year. He verbally accepted the invitation. My bad luck. I will miss him throughout my life. Maybe his blessings will be there always.

Dr Jeetendra Varma

*We will miss you and remember you forever, sir.*A true gentleman, a real teacher, an inspiration for the young generation, a bridge between academia and industry,Sir, we will miss you.

Dr Mukund Kadam

We were together at IVRI in 1972.I was working on my thesis, and Dr Deve Gowda was doing his M.V.SC. A good friend. Very knowledgeable,humble.He really contributed his knowledge to the academics and Industry both.I am really sad.My deep heartfelt condolences to the departed soul

Dr SV Vaidya

Big loss to the poultry fraternity. We were working together in the initial days of my career. He was recognised as a master in mycotoxins. We commenced a few field trials under his guidance. My deepest condolences, pray for his soul.

Murli

Deeply saddened by the passing of a distinguished Dr G. Devegowda Sir, whose contribution to animal health and science will continue to inspire generations. Though he is no longer with us, his dedication, research, and service to the veterinary fraternity will remain immortal. Heartfelt condolences to his family, colleagues, and students. Om Shanti

Sameer Patel

Very Sad to know. I had a good relationship with Dr Devagowda during my Hoechst and Indian Herbs days. He was the pioneer to introduce the modern nutritional concepts in Poultry in the 80's. Sad to know that he has passed away. My prayers for his Soul

V Velan

NOVUS Champions Success-Driven Solutions for Poultry and Dairy in South Asia

Fourteen-year NOVUS veteran Dr. Koushik De was recently named the intelligent nutrition company's technical director for South Asia. In this role, he leads the technical strategy for poultry and dairy customers in providing solutions designed to support on-farm returns.

Dr. Koushik De
Technical Director for South Asia

Regional Director for South Asia Manish Singh says moving Koushik into this role strengthens the entire organization.

"Dr. Koushik brings over two decades of expertise in technical, commercial and customer management," he says. "With a reputation for deep industry knowledge and a consistent track record of supporting customers, I know customers and colleagues alike support this change and look forward to what he will bring to the company and the industry in this role."

Koushik most recently served as sales director for the region and previously worked on the technical services team. He says, regardless of his position at NOVUS, the focus has always been on the customer.

"I've had the opportunity to grow through diverse roles that have prepared me well for this position," he says. "Working closely with customers, nutritionists, and field teams gave me a deep understanding of animal nutrition, on-ground challenges, and the importance of practical, reliable solutions. I also have an understanding of market dynamics and customer expectations. Combined, these experiences give me a well-rounded view of the business and where we can connect science with customer needs and commercial goals."

He and the four-person Technical Services team work closely with customers, nutritionists, and key stakeholders to understand their evolving challenges.

"That could be optimizing poultry feed efficiency and meat quality or supporting dairy productivity, health, and milk quality," he says. "We support the commercial teams with strong technical insights that show how our key solutions can deliver tangible economic benefits."

Koushik says customers across South Central Asia are facing multiple challenges. From rising input costs, pressure on margins, variability in raw material quality and availability, and increasing demand for better productivity and product quality in both poultry and dairy. There's also taking today's understanding about gut health, nutrient utilization, and overall animal resilience and putting that science into practice on the farm.

"For example, feed cost remains the single largest concern for producers. Advanced enzyme solutions can help unlock more value from existing raw materials by supporting nutrient digestibility and feed efficiency," he says. "Bis-chelated trace minerals are shown to have improved absorption over inorganic trace minerals, supporting structural integrity and promoting overall positive performance in both poultry and dairy."

Koushik says educating customers and stakeholders on what is possible through best management practices and intelligent nutrition creates a connection between aiming for goals and making them happen. His team has customer events and technical forums planned throughout the year aimed at engaging those in the poultry and dairy industries in discussions on challenges as well as demonstrating their expertise that can help deliver ROI-driven value.

To learn more about Dr. Koushik,

visit novusint.com/team/koushik-de-mvsc/

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