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JULY 2026

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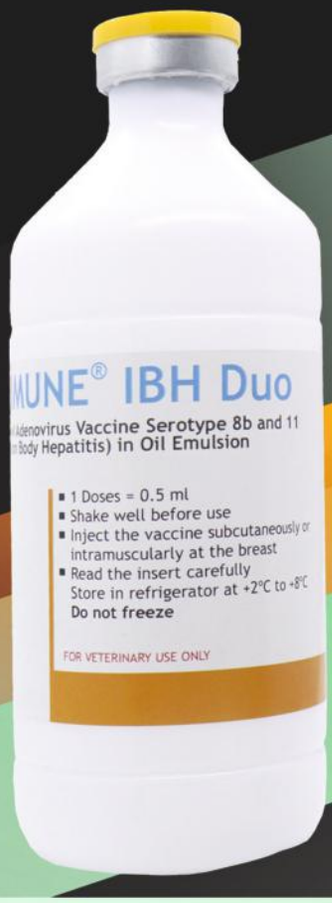

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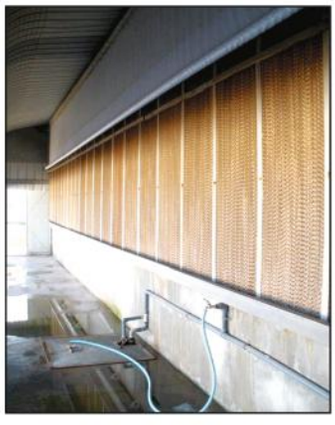

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From the Editor's Desk

The Shows Galore !

Recently, the Indian Poultry industry has hosted numerous shows across the country. Initially, there was one dominant Hyderabad exhibition, but over time, smaller regional exhibitions were encouraged and performed successfully. Most of the exhibitions that happened in tier one cities were always expensive to travel, stay and eat, restricting the budget, even for many corporates to send more people. Nowadays, the show is meant for only the affordable and is mostly populated by a massive number of exhibitors with a shrinking amount of actual farmers, even in the nearby location. The prices for participation are kept in line with euros or US dollars at the International level, making it neither very encouraging nor inconvenient for the masses to participate. Slowly, but steadily, today exhibitions have become only affordable by the elite few of the industry; moreover, many of the organisations and associations also putting up certain shows have commercialised to such an extent that charges are being made for any small opportunity. There is hardly one or a few more organs that offer free registration without money and also have free food (eggs and chicken biryani) bought by a sponsor, but free for the visitors and farmers. The exorbitant registration fee charged is a very big deterrent for visitors to come. All these associations and federations are supposed to be nonprofit organisations, so how come every step is made more expensive for the individual when there are already huge sponsors for the rest of the expenses?

We have reached a situation where every month we have one or more shows coming up somewhere in India, and that is not really viable for the companies to participate in all the shows. Yes, high-quality regional shows are always welcome, and to ensure that the core visitors – farmers and industry men exceed the number of exhibitors as noticed in some cases. Maybe all these associations and federations form one larger association and divide the geography, time and space so that it is a real contribution to the industry and does not turn out to be an unhealthy internal competition that causes loss ultimately to the farmer. Let the very purpose of such exhibitions and shows be more farmer, technology and knowledge specific, to add real value to the industry. Let it encourage farmers and visitors to matter without the burden of huge costs.

Heavy metals need better focus for fear that it is as they do contribute to immunosuppression, leading to the massive viral disease that our farmers are currently suffering. Macro, minerals, calcium sources, micro minerals – trace minerals uncertain, talks in binders, may need special attention. Make it a point to check for heavy metal-free products from your supplier. Several Indian companies are offering good-quality minerals and binders.

The never-ending drama of the US and Iran continues with no permanent settlement in sight. Right now, with the MOU, it is indeed a beginning; nevertheless, I need to see the result of the recent meeting in France, where US President Donald Trump met with the Prime Minister, Narendra Modi, and was full of praise.

The powerful group of G7 never failed to invite India to its forum – a clear sign of the importance of India in the world economies. The current Shri Narendra Modi government has done a great job in enhancing the international image of Bharat – indeed a very great achievement.

Editor

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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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JULY 2026 VOLUME-21 ISSUE-3

RNI NO. HARBIL/2006/18915

Contents

Legend SERIES 29

Mr.Gurdip Singh

Page No. 26-27

Legend SERIES 30 (Posthumous)

Dr. A.P. Sachdev

Page No. 98-99

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Ganga Agro Industries

Inaugurates Fully Automated Poultry Cage Manufacturing Unit at Panipat

Ganga Group announced the successful inauguration of its new venture, Ganga Agro Industries, on March 30, 2026, at Village Sutana, Panipat (Haryana). The launch marks a significant milestone in North India's poultry infrastructure and cage manufacturing sector.

The grand inauguration ceremony was graced by Ch. Abhay Singh Chautala, National President of the Indian National Lok Dal, as the Chief Guest, who extended his best wishes for the new venture.

Positioned as one of North India's most advanced poultry cage manufacturing plants, Ganga Agro Industries is equipped with the latest technology to produce high-performance cage systems for modern poultry farms.

A key highlight of the facility is the use of high-quality wire, ensuring superior strength, durability, and long service life of the cages—making them ideal for commercial poultry operations. The company will manufacture a wide range of advanced poultry cages designed for better space utilisation, improved bird management, and enhanced farm productivity.

The inauguration event witnessed participation from poultry industry professionals, progressive farmers, business associates, and local dignitaries, who were introduced to the company's vision and manufacturing capabilities. Speaking on the occasion, Mr Parveen Nain, Director, Ganga Group, said: "We aim to provide poultry farmers with world-class, durable, and technologically advanced cage solutions. Through Ganga Agro Industries, we are committed to using modern manufacturing practices and high-quality raw materials to deliver products that enhance farm efficiency and profitability."

Representatives of Ganga Group also emphasised their commitment to innovation, quality, and customer satisfaction, highlighting that the new plant will play a key role in strengthening India's poultry sector. With this launch, Ganga Agro Industries sets a new benchmark in poultry cage manufacturing and aims to emerge as a trusted leader in North India's poultry industry.

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एन्काऊन्टर नं. 279 :- पोल्ट्री में स्ट्रेस (Stress-तनाव) पर अब कोई ध्यान नहीं ?

पोल्ट्री उद्योग में एक समय था जब स्ट्रेस (तनाव) पर विशेष ध्यान दिया जाता था। यह बात है सन् 60 के दशक से लगभग 90–95 के दशक तक रही, जब स्ट्रेस पर विशेष ध्यान दिया जाता था। इसके बाद क्या हुआ ? कारण स्पष्ट था तब तक वह डॉक्टर या विशेषज्ञ शिखर पर थे जिन्हें विदेश से आये विशेषज्ञों ने ट्रेन्ड किया था। यह 'गोरे' स्ट्रेस पर बहुत ध्यान दिया करते थे। इनमें उन्होने कूट–कूट कर स्ट्रेस के विषय में जानकारी भर रखी थी अतः वह जब तक पोल्ट्री जगत में शिखर पर रहे इस पर विशेष ध्यान देते रहे।

मुझे याद है 1966 में जब मैने रानी शेवर ज्वाईन किया था मुझे ग्रैन्ड पेरेंट का स्टॉक जो आने वाला था उसका इंचार्ज बनाया गया था। वहां के G.M डाक्टर मोहोयुद्दीन अपने किसी पुराने स्टाफ को लगाना चाहते थे। जनरल साहब ने मुझे और सुरजीत सिंह जिसे डाक्टर साहब लगाना चाहते थे, दोनो को आफिस में बुलवा लिया। सवाल–जवाब शुरू हुआ और पहले ही सवाल के जवाब से फैसला हो गया और मुझे इंचार्ज बना दिया गया। सवाल था मुर्गियों पर किस किस तरह से और कितना स्ट्रेस पड़ सकता है। सुरजीत ने 5 गिनवा दिये और मैने 20–25 गिनवा दिये, आगे जरनल साहब ने रोक दिया और डाक्टर साहब से पूछा क्या कहते हो ? वह शरीफ आदमी थे उन्होने कहा आप का सेलेक्शन सही है।

मुझे याद है R_2B का टीका लगाना था,गर्मी बहुत पड़ रही थी – पहले स्टॉक का बॉडी वेट लिया गया फिर तय हुआ कब लगेगा। उस दिन रात के ठीक 3½ बजे डाक्टर साहब आ गये और हमने टीका लगाना शुरू किया । उस समय ऑटोमैटिक सिरेन्ज नहीं थे। नार्मल सिरेन्ज से लगाना शुरू हुआ और ठीक 8 बजे सुबह बन्द कर दिया। इसी तरह दूसरे दिन शुरू किया गया। वैक्सीन शुरू करने से तीन दिन पहले और बाद में 4 दिन ओर विटामिन्स एक पानी में दिया गया। वैक्सीन से 4 दिन पहले उन्हें 'डिवर्म' किया गया था। डाक्टर साहब को ट्रेन्ड करने वाले कनेडा से आये फ़ाऊलर साहब थे जिनके बताये हुये सिद्धान्तो का पूरा अनुसरण कर रहे थे। यही नहीं हर ऑपरेशन में साथ में स्वयं करते और मैं होता या एरिया का सुपर वाईज़र होता। पोल्ट्री मैन ने हाथ नहीं लगाया केवल बर्ड पकड़ कर दे रहे थे।

इसी प्रकार डीबीकिंग, शिफटिंग में वह स्वयं मौजूद रहते एवं मौसम के हिसाब से ध्यान रख कर काम करते। यहां भी एन्टी स्ट्रेस फीड देते जिसमें T.M 100 या आरोफेक होता और साथ में अतिरिक्त विटामिन K होता। डीबीकिंग के समय इसके अतिरिक्त विटामिन पानी में पहले से ही देना शुरू कर देते एवं बाद में इसे भी 3–4 दिन और दे देते।

पाँच विदेशी पोल्ट्री से जुड़े विशेषज्ञों ने भारतीय पोल्ट्री को नया आयाम दिया, नई रूप रेखा एवं दिशा दी। इसमें से जो पाँच प्रमुख हैं उनमें से चार से मैं अक्सर मिला। स्वर्गीय जिम गिल्मोर जो मेरे गुरू भी थे और लगातार 4 साल तक उन्के सम्पर्क में रहा। वह काफी लम्बे समय तक भारत में रहें। उस समय भारत खाद्यान्न के मामले में आयात पर निर्भर था। वह कनेडियन पूरे भारत का भ्रमण करते और कहते कि "एक समय ऐसा आयेगा कि भारत विश्व को फ़ीड करेगा" वह समय तो आ गया है – हम निर्यात भी कर रहे है, परन्तु उनकी भविष्य वाणी का बहुत छोटा भाग ही हो पा रहा है। शायद हमारी कृषि पॉलीसी में कोई त्रुटि है या हम इस मामले में गम्भीर नहीं। डाक्टर मिलन हाईलाईन अमेरिका की और से हाईब्रिड इण्डिया करनाल आये, ब्रीडिंग फार्म डेवलप किया और भारत में जगह जगह टेक्नीकल सेवा भी प्रदान की। श्री फाऊलर शेवर कनेडा से आए और रानी शेवर ब्रीडिंग फार्म डेवलप किया और साथ ही बाहर के पोल्ट्री फार्मो को भी अपनी सेवायें प्रदान की। डाक्टर अर्ल.एन मूर अमेरिका से आये और नई पोल्ट्री को दिशा दी। स्वर्गीय B.V. Rao और डाक्टर मोहोयुद्दीन उन्हीं की देन है। राव साहब उस्मानिया युनिवर्सिटी के पोल्ट्री फार्म पर कार्यरत थे, जो डाक्टर मूर की देख रेख में पनप रहा था । डॉक्टर मोहोयुद्दीन हैदराबाद में वेट की हैसियत से काम करते थे। एक नाम जो डाक्टर मेकार्ड का जो ऑस्ट्रेलिया से आये जो कि लम्बे अर्से तक भारत में रहे और रूरल पोल्ट्री डेवलपमेन्ट के लिये उन्हें लम्बे अर्से तक याद किया जायेगा। यह सभी एक दिन के बच्चे से लेकर उनके बिकने तक स्ट्रेस पर बहुत जोर देते थे। यह सभी 1955 से 1965 के बीच में आये और अपनी छाप छोड़ कर चले गये। वापसी इनमें से कुछ की 1970 के बाद हुई। इन सभी का मानना था कि यदि हम स्ट्रेस या तनाव– दबाव के असर को कम कर दें तो बिमारियों का कम–प्रकोप होगा एवं अवरोधक क्षमता बढ़ेगी। उत्पादन अधिक मिलेगा एवं F.C.R. कम से कम आएगा। इन सबके लाभ के बावजूद हमारा ध्यान स्ट्रेस पर से लगातार कम होता गया और अब तो ऐसा लगता है कि हम स्ट्रेस से होने वाले नुकसानों के बारे में जानते ही नहीं।

एक फार्म के विजिट पर था, दिन के 10–11 बज रहे थे ग्रोअर्स में अंदर वैक्सीन लगा रहा था – वैक्सीन लगते ही उन्हे बाहर खड़ी गाड़ी के क्रेटों में डाला जा रहा था। गाड़ी लोड होने के बाद लगभग 10–12 किलोमीटर दूर लेयर यूनिट में शिफ्ट करने के लिएं वहां से चल पड़ी। मैने सुपर वाईज़र से कहा इतनी गर्मी में कैसे शिफ्ट कर रहे हो ? जवाब था "अब रोक दिया है – कल सुबह 6 बजे आयेगा" । कायदे से पूरे शेड का वैक्सीनेशन करने के 6–7 दिन बाद शिफ्ट करना चाहिये था। समय होना चाहिये पूरी रात या दो ढ़ाई बजे से शुरू कर सुबह 7 बजे तक। एन्टी स्ट्रेस फीड या पानी में विटामिन्स छोड़िये इसकी अब हम परवाह ही नहीं करते।

यहां ज़रा स्ट्रेस जोडिये, एक ही समय में हमने कितना दिया। पहला वैक्सीनेशन के लिये हैण्डलिंग दूसरा वैक्सीनेशन जो बहुत ज्यादा स्ट्रेस देता है, तीसरा गर्मी का समय, चौथा क्रेट में डालना, पाँचवा सफर, छठा अनलोडिंग की हैण्डलिंग और सातवां स्ट्रेस नया वातावरण। अब बताईये इस एक ऑप्रेशन में इक्टठा 7 स्ट्रेस दे दिये। यह एक ग्रोअर के लिए बहुत अधिक है । जिस का अन्दाजा हम और आप लोग नहीं लगा सकते हैं। यह पक्षी है आपकी भाषा में अपना दुख दर्द बता नहीं सकते। हा कांय–कांय चिल्लाती जरूर है।

हमारे और आप पर स्ट्रेस पड़ता है, जब भाव गिरना शुरू होता है – हम क्या करते है थोड़ा सुस्त पड़ जाते है, मूड खराब हो जाता है– उसे ठीक करने के लिए तुरन्त दो–तीन पैग लगा लेते है और सुबह 'तरोताजा' होकर फार्म पर चले जाते है।

VAXXITEK®
HVT+IBD+ND

FROM THE TRUSTED LEADER IN
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DESIGNED FOR YOU

- 3 in 1 — Strong immune foundation and optimized protection against Marek's, Infectious Bursal, and Newcastle diseases[1]
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- VII — Genotype VII ND insert
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Reference: 1. Data on file. Boehringer Ingelheim Animal Health.
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Bursal Disease-Marek's Disease Newcastle Disease Vaccine, Serotype 3, Live Marek's Disease Vector

Vaxxitek HVT+IBD+ND

To be sold by retail on the prescription of a "Veterinary Doctor" only

Composition: Each dose of vaccine contains: MD vectored IBD & ND recombinant virus, Serotype 3- At least 5696 pfu, DMSO/Freezing Solution- 7.5 %, Freezing Media-1 dose q.s., Penicillin <= 30.0units/mL, Streptomycin <= 30.0 mcg/mL, Amphotericin B <= 2.5mcg/mL, calf serum 15 % **Indication:** This product has been shown to be effective for the vaccination of healthy 18 to 19-day-old chicken embryos and one-day-old chickens against standard and variant bursal disease, Newcastle disease and Marek's disease. **Dosage and administration:** In ovo Administration: Use two hundred (200) mL of sterile diluent is used for each 4,000 doses of vaccine to be administered in ovo. Dilute the vaccine only as directed. Inject a 0.05 mL dose into each embryonated egg. Use entire contents of the vaccine container within one hour after mixing the vaccine with diluent. Subcutaneous Injection: Use 200 mL of sterile diluent for each 1,000 doses of vaccine to be injected subcutaneously. Inject chickens under the loose skin at the back of the neck (subcutaneously), holding the chicken by the back of the neck just below the head. The loose skin in this area is raised by gently pinching with the thumb and forefinger. Inject 0.2 mL per chicken. Avoid hitting the muscles and bones in the neck. Use entire contents of the vaccine container within one hour after mixing the vaccine with diluent. **Age-** Day old chickens and 18 days embryonated eggs. **Pregnancy and Lactation:** Not applicable **Contraindications:** Do not vaccinate diseased embryonated eggs or diseased birds. **Special warnings and precautions:** Do not mix the vaccine with other vaccines or veterinary medication. Use the entire contents of the vaccine container within one hour after mixing the vaccine with diluent. Use entire contents when first opened. Do not vaccinate diseased embryonated eggs or diseased chickens. Avoid contact with eyes, hands and clothes when using the vaccine. **Adverse reactions:** None known. **Shelf Life and Storage:** Shelf life is 18 months, AMPULES: Store in liquid nitrogen container. DILUENT: Store at room temperature. **MAH Holder:** - Boehringer Ingelheim India Pvt Ltd, Unit No. 202 and part of Unit no. 201, 2nd Floor Godrej 2, Prajsha Nagar, Eastern Express Highway, Vikhroli (E) | Mumbai 400079.

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"Additional information is available on request."

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यह स्ट्रेस हमारे आप पर या पोल्ट्री पर ही नहीं पड़ता है– पेड़ पौधों पर स्ट्रेस के असर पर एक शोध कार्य हुआ। गमले में लगे फूल आदि का गमला उठा कर दूसरी जगह रख दें, तो कुछ दिनों के लिए उसकी पत्तीया मुरझा जाती है फूल भी झुक जाते है । नर्सरी से ला कर दूसरी जगह लगाते हैं, तो उसकी पत्तीयां पीली पड़ कर गिर जाती है।

अब आईये स्ट्रेस के सन्दर्भ में सीधी पोल्ट्री की ही बात करते हैं। यह तनाव–स्ट्रेस पोल्ट्री में तो चिक्स के शेल से बाहर निकलने से पहले से लेकर अन्त तक रह–रह कर चलता रहता है। वह चाहे ब्रायलर हो, लेयर हो, या ब्रीडर हो। जब से प्राईवेट वैक्सीन बनाने वाली कम्पनियों के हाथ में वैक्सीनेशन प्रोग्राम आ गया है, उसके बाद से तो स्ट्रेस की संख्या बढ़ती जा रही है ।

जहां हमारा ध्यान फीड, पानी और बीमारियों पर है, वही स्ट्रेस जो सदैव जोखिम भरा है– इस पर ना के बराबर है। बहुत सी समस्याओं की जननी या उत्पादन में कमी का श्रेय भी इसको जाता है। एक फ़लाक के सबसे अच्छा उत्पादन देने वाली मुर्गीया या सबसे वजनदार ब्रायलर की मृत्यु का कारण भी यह स्ट्रेस होता है। अब आईये विस्तार से उन कारणों की समिक्षा या विचार करते है, जिनके कारण स्ट्रेस होता है – भले ही कम हो, मध्यम हो या बहुत अधिक हो। हर स्ट्रेस की तीव्रता अलग अलग होती है

- हैचर में चिक्स निकलने के समय यह नवजात शिशु अपनी चोंच से शेल को बार–बार मार कर तोड़ने की कोशिश करता है और बाहर निकलने की कोशिश करता है। वहां कोई नर्स या दाई या डाक्टर नहीं है। अधिकांश सफल हो जाते है, परन्तु कुछ बच्चे निकलने में असफल होने के बाद अन्दर ही मर जाते है और कुछ जिन्दा भी रहते है। तय है यह पहला स्ट्रेस उन पर पड़ता है
- दूसरा स्ट्रेस उनकी ग्रेडिंग और काऊटिग के समय हैडलिंग के कारण पड़ता हैं
- तीसरा स्ट्रैस जब उन्हे हैचरी में कोई टीका लगना होता है। यहां भी हैण्डलिंग होती है और उसपर से सितम यह है जिस प्रकार से वैक्सीन लगने के बाद हैन्डलर चूजे को बाक्स में फेकता है। ध्यान दे हैचरी में ही 3–4 बार हैण्डलिंग हो गई। हर हैण्डलिंग कुछ ना कुछ स्ट्रस डालती है। वैक्सीन का अपना असर अलग होगा ।
- यहां से चिक्स लम्बे सफ़र पर निकल जाते है, जो कुछ घन्टों से लेकर 24–36 घन्टे तक हो सकता है। जितना लम्बा सफ़र होगा उतना ही उन पर ज्यादा स्ट्रेस या दबाव पड़ेगा।
- चलिये अब चूजे फार्म पर पहुंच गये। अगर रात देर से पहुचे तो कुछ किसान उन्हें सुबह ब्रूडर हाऊस में खोलते है। यह बहुत बड़ा स्ट्रेस है, कि हैच निकलने के बाद जहां तुरंत पानी और दाना मिल जाना चाहिये था – वहां ये भुखे प्यासे डिब्बे में बन्द पड़े है। यह भी एक बड़ा स्ट्रेस है।
- यहां भी कुछ वैक्सीन ठोकी जायेगी – हर वैक्सीन का अपना स्ट्रेस है और उसपर से हर हैण्डलिंग का स्ट्रेस अलग है ।
- हर हैण्डलिंग कुछ ना कुछ स्ट्रेस या दबाव डालती है। कितना डालती है यह निर्भर करता है आपने कैसे हैण्डलिंग की। इसीलिए कहते है कि टैंडर लविंग केयर के साथ हैन्डलिंग करें। गर्मी और बरसात में दिन के सबसे ठण्डे समय में की या आपने मौसम का ध्यान ही नहीं किया जैसा हम आमतौर से देख रहें है। उनको पकड़ने का ढ़ंग कैसा था। सिद्धांत कहता है कि, एक छोटे दायरे में जाली के उपयोग से घेर ले जो आ गए है उन्हें आराम से पकड़ कर डीबीकिंग, वैक्सीनेशन या शिफटिंग करें। एक समय में एक ही काम करें। दायरा खाली हो जाय तो उसमें आराम से हंकाल कर लाये नाकि शोर शराबे के साथ दौड़ा कर लायें। जो भी भाड़े का ऑपरेटर है वह चोंच काटने के बाद या वैक्सीनेशन के बाद पक्षी को तेज फेकता है – यह बिल्कुल गलत है – आराम से छोड़े।
- जब भी कोई आप्रेशन करें तो उसे प्रारंभ करने से 2–3 दिन पहले और आप्रेशन के 4–5 दिन बाद तक एन्टी स्ट्रेस फ़ीड या पानी के द्वारा अवश्य दें।
- किसी भी ऑपरेशन से पहले अन्दरूनी और बाहरी पैरासाईट का निवारण कर ले जैसे, वर्मस, लाईस माईस एवं टिक्स इत्यादि।
- यदि बिकने के लिए माल पकड़ना हैं लाल या ग्रीन जीरो वाट के बल्ब की रोशनी में आराम से पकड़ सकते हैं अन्यथा दूसरे दिन शेड के माल का वजन बढ़ना रूक जायेगा या घट भी सकता है।
- यह सब ऑप्रेश्नल मुद्दे हैं जिसे हम आम तौर से अपनी सुविधा अनुसार करते है, ना कि पक्षी को और उसपर पड़ने वाले स्ट्रेस को ध्यान में रखते हुये करते है।
- विडंबना है जब से प्राईवेट वैक्सीन की कम्पनियां आ गई है और उनके हाथ में वैक्सीनेशन प्रोग्राम भी चला गया है तब से वैक्सीन लगाने की होड़ सी लगी हुई है। पहले सप्ताह में या पहले 10 दिन में 7–8 वैक्सीन ठोकी जा रही है। बताईये इतना छोटा चूज़ा इस तनाव या स्ट्रेस को किस प्रकार झेलता होगा। हर वैक्सीन का अपना स्ट्रेस है और साथ में होने वाली हैण्डलिंग का अपना स्ट्रेस अलग है। 30 सप्ताह में 30 – 44 वैक्सीन ठुकवाई जा रही है। यहाँ "लगवाई" जा रही है शब्द लिखना बहुत नर्म शब्द होगा इस दुष्कर्म के लिये। दुर्भाग्य की बात है कि हमारे स्वदेशी वैज्ञानिक शान्त होकर तमाशा देख रहे हैं। हमे I.V.R.I और C.A.R.I को जगाना पड़ेगा। एक वैक्सीन हमने लगाई, उसका रिएक्शन होगा, स्ट्रेस पडेंगा इसके अतिरिक्त हैण्डलिंग का स्ट्रेस अलग होगा। इन दोनों का स्ट्रेस अभी खतम नहीं हुआ हमने दूसरा टीका ठोक दिया। यह कहां तक उचित है ? इसका जवाब हमारे वैज्ञानिक ही दे सकते हैं – उनके सामने हम लोग बहुत निम्न स्तर के पैरासाईट है, इस प्रकार बेचारा पक्षी सदेव स्ट्रेस में ही रहता है । कहानी 30 सप्ताह में ही खतम नहीं होती है, इसके आगे भी हर महीने पर किल्ड वैक्सीन कोई ना कोई लग ही रही है। यही यदि पानी में मिलाने वाली वैक्सीन होती तो कम से कम हैण्डलिंग का स्ट्रेस तो ना होता।
- हर लेयर या ब्रीडर फार्म पर जहां लाईव वैक्सीन रिपीट होती थी अब किल्ड हो रही है और साथ में हैण्डलिंग स्ट्रेस। इसके कारण कुछ दिनों के लिए अण्डे का उत्पादन घटता है। जो घटा वो अण्डा कभी नहीं मिलेगा हर वैक्सीनेशन (किल्ड) के साथ हम नुकसान उठा रहे है। भले ही चन्द दिनों में प्रोडक्शन वापस आ जाये – जो घट गया वह हमेशा के लिए घट गया और हेन हाऊस्ड प्रोडक्शन में हमेशा के लिये कम हो गया।

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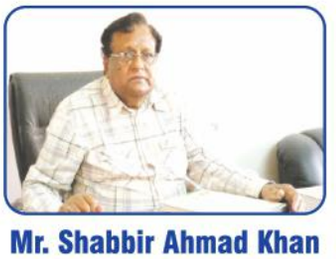
मौसम का स्ट्रेस :–

- अपने देश में आम तौर से अधिकांश पोल्ट्री ओपन शेड में होती है। ई.सी. शेड बनने लगे है परन्तु इनमें उत्पादन 10% के ही लगभग होगा। ओपेन हाऊस में मौसम की मार से बचने के लिये फिलहाल 'जुगाड़' सिस्टम है। इसी के सहारे भारत में पोल्ट्री का लम्बा सफर लगातार बढ़कर शिखर पर पहुँचा है और विश्व में दूसरे एवं तीसरे स्थान पर है ।
- विशेष रूप से गर्मी और बरसात में यदि सही बन्दोबस्त ना हो तो उत्पादन काफी घट जाता है साथ ही मोर्टीलिटी भी बढ़ जाती है। इसीलिए छत पर पूला, सिंप्रकलर चलाना, साईड की पल्ली के पर्दे को गीला रखना, शेड के अन्दर फोगर चलाना कूलिंग में सहायक है।
- गर्मी या बरसात में मुर्गियों पर बहुत जबरदस्ट हीट स्ट्रेस का दबाव पड़ता है। जहां मुर्गियों पेंटिग– मुहँ खोल कर साँस लेने लगती है और हलक से हक–हक आवाज निकालना शुरू कर देती है। यह आवाज जितनी ज्यादा होगी सभवतः उतना ही अधिक स्ट्रेस उन पर पड़ रहा है। यह गर्मी और बरसात दोनों समय की समस्या है।
- ऐसी अवस्था में कूलिंग व्यवस्था, फीड फार्मूलेशन में तबदीली करना पड़ता है क्योंकि फीड़ की खपत काफी घट जाती है । वह सभी कार्य जो हम गर्मी और बरसात मे स्ट्रेस को कम से कम करने के लिये करते है– समय रहते कर देना चाहिये।
- फीड़ खाने की व्यवस्था में तबदीली करना अनिवार्य हैं। हमें मौसम को देखते हुये शाम को उतना ही दाना लगाना चाहिये जितने से फीडर 9–10 बजे सुबह तक खाकर फ़ीडर खाली कर दें। मौसम को देखते हुये शाम 4–5 बजे उतना ही फीड लगायें जो सुबह 9–10 बजे तक ही चले।
- दाना खाने का समय बढ़ाने के लिये सुबह जो अतिरिक्त प्रकाश के लिये आमतौर से लाईट 4 बजे जलाते है उसे तीन बजे ही ऑन कर दें।
- ठण्डा पानी ही उन्हे पीने को मिले। हमारे मौजूदा पानी के सिस्टम में यह बड़ी समस्या है कि गर्मी में पानी गर्म हो जाता है और वही जाड़े में बहुत ठण्डा हो जाता है। दोनों में पानी की खपत घट जाती है, जो सीधा नुक्सान पहुचाने के साथ गहरा स्ट्रेस का कारण बनता है।
- जाड़े में आमतौर से मौसम के कारण निम्न स्तर का ही स्ट्रेस पड़ता है – इसके लिए हमें रात में ठीक से मोटा पर्दा लगाने से ही काम चल जाता है।
- हमें हर हाल में सीधे ठण्ड़ी हवा से बचाने के लिये दिन में केज की ऊचाई तक पर्दा लगाना पड़ सकता है – ऊपर का पूरा खुला रखना होगा।
- जाड़े की एक समस्या जरूर है, वह है अमोनिया गैस। यदि उम्र के हिसाब से उपर से पर्दा कम या ज्यादा नहीं खोला गया, जो एक या दो फुट हो सकता है, जिससे ताजी हवा रात में भी ऊपर से अन्दर जाये और अमोनिया इत्यादि को दूसरी और से बाहर निकालती रहे।
- इस प्रकार से यदि वेन्टीलेशन नहीं रक्खा गया, तो अमोनिया लेवल बढ़ कर घातक रूप धारण कर लेगा और जबरदस्त स्ट्रेस के कारण कई बीमारियों को जन्म देगा। यही नहीं जो आपने वैक्सीन द्वारा सेफ इम्यूनिटी बना रखी है उसको भी निष्क्रय कर देगा।

मैनेजमेन्टल स्ट्रेस :–

- रख–रखाव में कोई भी कमी स्ट्रेस का कारण बन सकती है।
- आमतौर से लीटर कम और उसमें अधिक नमी का होना स्ट्रेस का कारण बन सकता है एवं कई बीमारियों को उत्पन्न कर सकता है। अमोनिया बढ़ाने में सहायक है ।
- अधिक पक्षी कम जगह में रख कर हम स्ट्रेस में फलाक का पालन पोषण कर रहे है। जहां ग्रोथ या उत्पादन पर असर पडेगा वहीं फलाक में छोटे और बड़े बर्डस में बहुत अन्तर होगा। उनकी शकल से लगेगा कि फलाक स्ट्रेस में है।
- दाने और पानी के बर्तनों में कमी बहुत बड़ा स्ट्रेस का कारण है ।
- ब्रूडिंग के समय तापमान कम होना या बहुत अधिक होना तनाव का कारण है। अधिक समय या अधिक दिनों तक यह कोल्ड स्ट्रेस चला तो मार्टीलिटी तो कर ही सकती है –साथ ही C.R.D, E-COLI या कोराइजा जैसी बीमारी उत्पन्न कर सकती है।
- पोल्ट्री शान्त वातावरण चाहती है। किसी प्रकार का शोरशराबा उन्हें पसन्द नहीं। आप शेड में छींक दे या तेज खाँस दे फलाक एक दम उछल पड़ेगा और लम्बी कांऐ की आवाज निकालेगा। शेड के पास से गाड़ियों का निकलना या तेज हार्न बजाना भी उन्हे विचलित करता है एवं स्ट्रैस का कारण बनता है। अभी हाल ही में कुछ महीने पहलें सुलतानपुर (U.P.) में D.J. बजता हुआ पोल्ट्री फार्म के पास से गुज़रा। वह इतना तेज बज रहा था कि लगभग 150 बड़े ब्रायलर स्ट्रेस के घेरे में आगये और थोड़ी ही देर में मर गये।
- लेख बड़ा हो चुका है आप स्वयं तजुर्बेकार है स्ट्रेसेज की पूरी लम्बी चौड़ी लिस्ट बना सकते है। इसे ध्यान में रखते हुए अपनी कार्यपद्धति में बदलाव कर सकते है। ध्यान रहे कि एक समय में एक या दो ही स्ट्रेस रहे – इससे अधिक पर आप फलाक को बर्बाद कर सकते है
- कहने को तो स्ट्रेस शब्द बड़ा अच्छा नाम है परन्तु यदि वैज्ञानिक ढ़ंग से इस शब्द, इस के द्वारा फार्म पर होने वाले नुक्सानों की समीक्षा करे तो आपको पता चल जायेगा यह बड़ा साईलेन्ट किलर है जो सीधे मार्टोलिटी के शक्ल में नुकसान पहुँचाता सकता है यही नहीं ये बहुँत सी बीमारीयों को पनपने का मौका देता है।
- मैनेजमेंट के सभी आयामों के साथ यह भी एक महत्वपूर्ण भाग है जिसमें हमारा ध्यान बहुत ही कम है।



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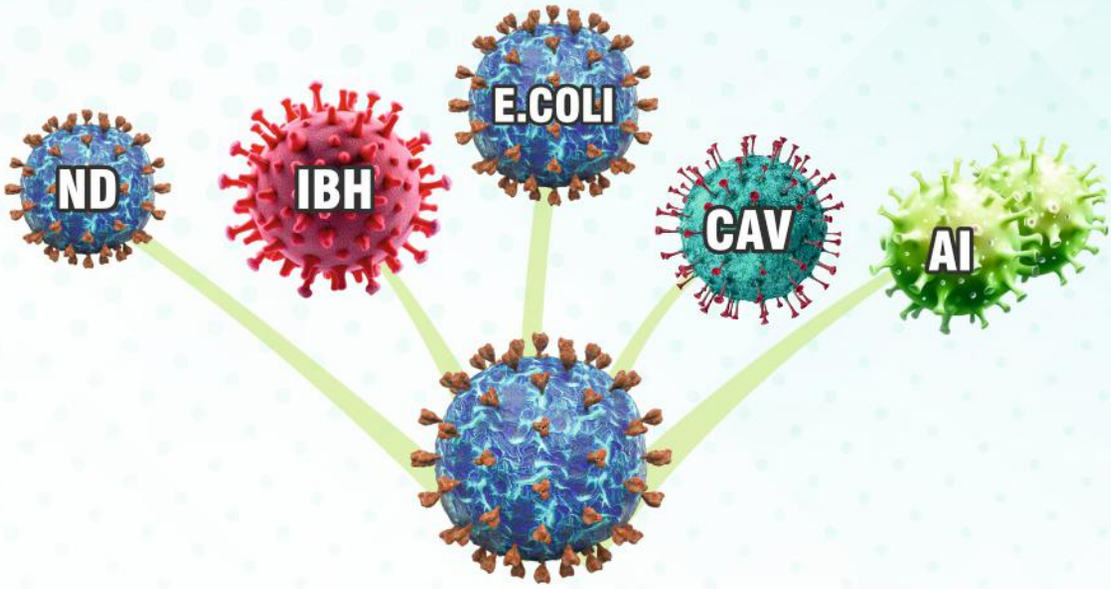

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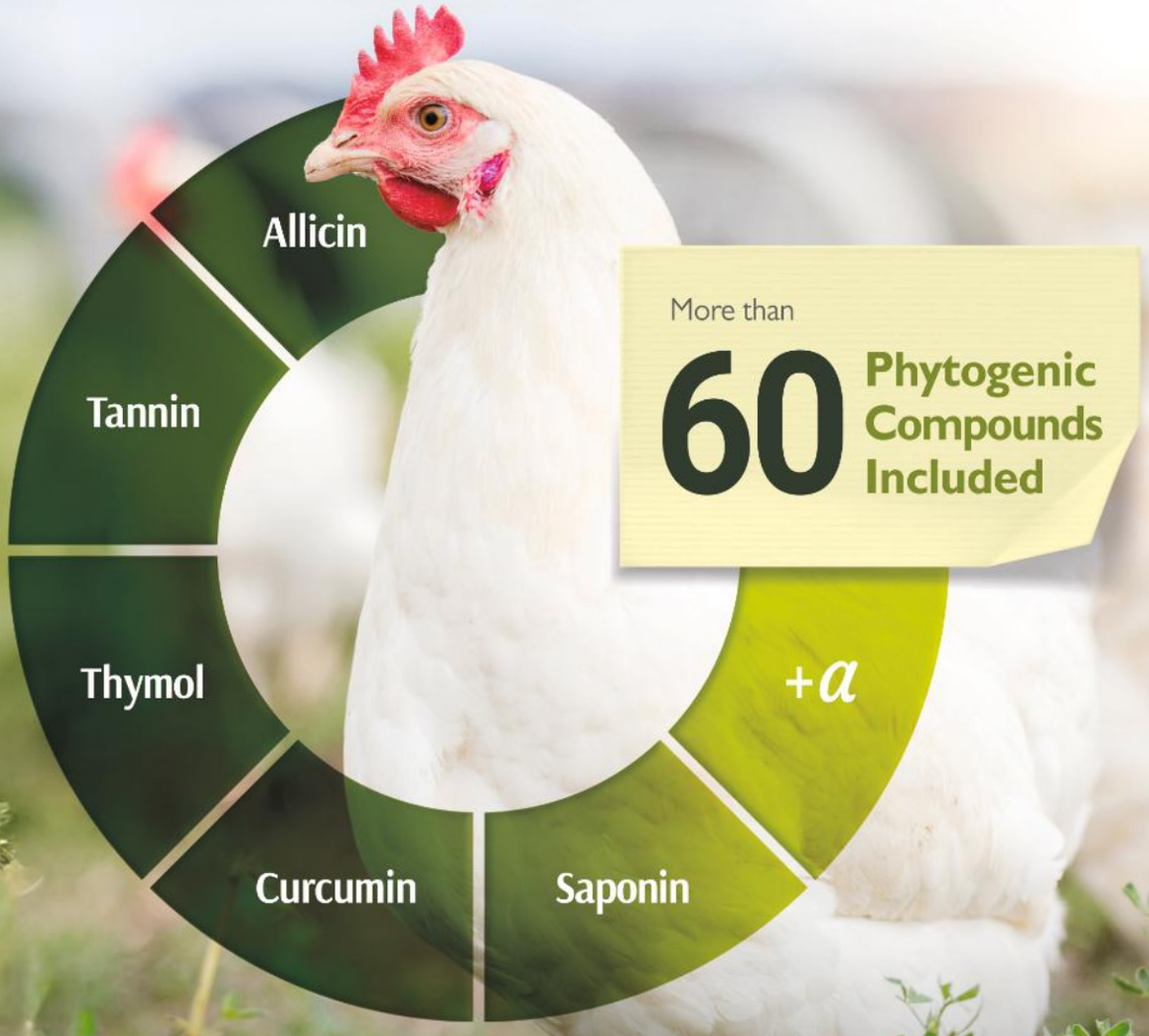

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Legend SERIES 29

In our journey we visited many faces with our poultry Sector legends, and one among them is MR. GURDIP SINGH

1. Are you originally from Karnal?

I was born and spent my early childhood in a small town called Arifwala in District Montgomery now in Pakistan. Rehabilitation Department set up by Govt. of India earmarked and alotted District Ferozpur to settle all "refugee" from District Montgomery. But, as my father was a prominent politician & well connected so Mr. Liaquat Ali Khan Prime Minister of Pakistan exchanged property with my father so we came and occupied Mr. Liaquat Ali Khan's property in Karnal. Since then we are happily settled in Karnal.

2. What is the best thing you liked in your Journey?

After Arifwala I did my schooling from The Lawrence School Sanawar, the oldest residential co-educational public school in India. I did my B.Sc. in Agriculture & was farming 214 acres alotted to us as 5% compensation of our land holding left in Pakistan. As agriculture returns were meager—without Dr. Norman Borlang's Mexican wheat or American hybrid corn so I started with 5000 New Hampshire chicks from Govt. Poultry Farm, Gurdaspur. Pioneer Hi-Bred Corn Company USA, the international leaders in corn & sorghum, who owned Hy-Line layers & India Rivers Broilers Company posted Dr. T.W. Millen in India to survey & find a suitable partner to expand and promote their business in India. Dr. Millen, who was familiar with India, spent over a whole year touring, meeting prospective partners before narrowing down on three parties including Singh. Subsequently, I signed the first poultry & seed breeding collaboration with USA company which was approved by Ministry of Food, Agriculture & Cooperation, Govt. of India. There was no looking back as we decided to set up one Associate Hatchery in each State. This enabled us to capture 70% of all India market & we sold 2.5 million Hy-Line chicks in 1971. This distribution system was the best thing that happened both for our company & our country.

3. Why you chose the Poultry/Livestock profession?

I chose poultry & agriculture as my profession because I come from the background of being a landlord now "Land less Lord."

4. As compared to other big players in the industry, how is your organization different?

There was SB Saran, operating from Talegaon with Abor Acres from USA, Rani Nehra from Gurgaon with Shaver from Canada & Harinder Katyal from Delhi with Unichix from Czechoslovakia, Gurdip Singh got down to business. Driven by desire to share his success and popularise poultry in every nook and corner of the country, first, he set out to create a network of 18 associate hatcheries, one in every state (then there were only 18 states in the country). Parent stock was leased to these partners and these farms in turn produced and marketed commercial chicks in the respective areas assigned to them. The amazing response to the Hy-Line breed giving 260 eggs against 60 eggs of the desi breed was well most welcomed.

Mr. Fritz J. Garloff, Hy-Line International Marketing Director, Dr. T.W. Millen, Mr. Simon Casady, Vice President Hy-Line International visit to Poultry Farm at Kulwaheri.

Hi-Bred India Private Ltd. Hy-Line Grand Parent Farm

MR. R. WAYLINE SKIDMORE, PRESIDENT PIONEER HI-BRED INTERNATIONAL U.S.A. BEING PRESENTED A SILVER MODEL OF THE NEW COMPLEX OF HI-BRED (INDIA) PVT. LTD. AT KARNAL BY DR. C. KRISHNA RAO, ANIMAL HUSBANDRY COMMISSIONER GOVT. OF INDIA AT ITS INAUGURATION ON 29.08.70.

1972-73 HY-LINE CHALLENGE TROPHY FOR THE BEST ALL AROUND PERFORMANCE BY ASSOCIATE HATCHERY BEING PRESENTED TO MR. K.S. HAZURIA OF HY-LAY POULTRY FARMS NEW DELHI BY MR. DON WOMACKES OF HY-LINE INTERNATIONAL U.S.A.

Gurdip Singh and H. Roberts III signing the agreement with Dekalb International for G.P. Layers

MR. L. VICTOR EVANS PRESIDENT PETERSON INDUSTRIES INC. U.S.A EXCHANGING THE AGREEMENT FOR SUPPLY OF PETERSON BROILER PURE-LINES TO INDIA WITH MR. GURDIP SINGH MANAGING DIRECTOR HI-BRED INDIA PVT. LTD. KARNAL ON JUNE 13,1969.

Plaque presented to Hi-Bred India Pvt. Ltd. In Recogniton of having sold 2.5 million Hy-Line Chicks in the year 1971.

1970-71 HY-LINE CHALLENGE TROPHY FOR THE BEST ALL ROUND PERFORMANCE BY ASSOCIATE HATCHERY BEING PRESENTED TO MR. R.K.PURI OF KWALITY FARMS, POONA BY DR. WILLIAM L. BROWN VICE PRESIDENT PIONEER HI BRED INTERNATIONAL U.S.A.

1983-84 HY-LINE CHALLENGE TROPHY FOR THE BEST ALL ROUND PERFORMANCE BY ASSOCIATE HATCHERY BEING PRESENTED TO MR. KISHORE PUTHANE OF PUTHANE HATCHERIES, MADRAS BY DR. DENNIS W. CASEY PRESENT HY-LINE INDIAN RIVER COMPANY, U.S.A.

Gurdip Singh being felicitated by G. N. Ghosh, Managing Editor, Indian Poultry Review at the IPR Golden Jubilee Conclave

In this way Hy-Line soon had 70% of the all India market share. Singh shared, "Setting up of associate hatcheries was a unique and novel experience. With it we had regular reporting of short/surplus chicks which we organized as required." Regular day schools were organized all over the country with foreign and local technicians. Annual Associate Hatchery meetings were organized at different locations to boost local poultry. The best all round Associate Hatchery every year was presented the coveted silver Hy-Line Challenge Trophy. In additions Hi-Bred India sponsored its staff and its associate representatives training in USA. Hi-Bred India also took associates to international poultry events to further exposure. "Eight of us went to Spain in 1970 to attend the World Poultry Congress." Hi-Bred India also sponsored 30 representatives to Egg & Poultry Show in at Atlanta, USA and a tour of USA and Hy-Line facilities for 30 days. Another first was executing marketing plans for promotions in India. Hi-Bred India arranged for Egg promotions by brochures, leaflets; beautifully illustrated and designed which were freely distributed at every opportunity. Big success came when Aleque Padamsee's jingle played on 18 stations of All India Radio regularly at 8 am every morning. Hi-Bred India exported Hy-Line Chicks regularly as far as Hong Kong in the East and Greece in the West. Govt. of USA celebrated their bicentenary year in 1976 by organizing The World Food Congress. They invited representatives from 70 countries. Gurdip Singh was one of the only representatives to be invited from India to be the panelist at The World Food Congress.

5. Please tell us about your family?

Our Company was the first to introduce feather sexing in commercial layers. However, vent sexing was necessary when dealing with parent stock. My wife was the first to learn vent sexing from Dr. T.W. Millen—his comment after the first 2 months "you are faster & more accurate than I am." Our twin sons also got actively involved in the poultry business and travelled abroad all over.

6. What you have dreamt for the next generation who enter the poultry business?

I would emphasize the need of integrity, resilience, and foresight. Without integration sustained progress maybe hard to achieve.

7. What is your favorite eatery food?

I am a non-vegetarian and savor the taste of good cooking. Specially fond of, soul fish and prawns.

8. What are your Hobbies?

I am a keen philatelist. Love travelling and meeting people.

9. Anything you would like to add?

I am intrinsically involved with secondary and higher education in the country. I have been on the Board of Governors of six different schools and one reputed College.

I am deeply indebted to my family and friends who have over the many long years stood by me in the hour of joy & sorrow.

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

Technical Seminar Highlights Hidden Losses in Layer Farming at Karnal, Haryana

RR Animal Health Care Ltd. recently hosted an insightful technical seminar at the Hotel Yellow Sapphire, Karnal, bringing together over 50 prominent layer farmers and industry stakeholders from the region. The event focused on a critical yet often overlooked aspect of poultry productivity under the theme: **"Viruses Don't Cause the Biggest Loss... Inflammation Does - The Hidden Loss in Layer Farming."**

The successful execution of this gathering was made possible through the **able leadership and support of Mr. Chirag and Mr. Bhutani from the CENTRAL HARYANA POULTRY FARMERS ASSOCIATION,** whose efforts were instrumental in uniting the local farming community for this educational initiative.

Key Discussions and Testimonials

The seminar served as a platform for high-level knowledge exchange, addressing how chronic inflammation impacts egg productivity and flock longevity.

- **Technical Presentation:** Dr. Rajeeb Kumar Roy delivered a compelling keynote presentation detailing the physiological toll of sub-clinical inflammation. He explained that while viral outbreaks are visible and feared, the "hidden" metabolic drain caused by inflammation often results in more significant cumulative economic losses.
- **Expert Guidance:** Dr. Shimanta Sharma, Director of RR Animal Health Care Ltd., provided strategic guidance on organising the seminar to address the field challenges of the layer farmers.
- **Field Success:** During the interactive session, Mr. Gagandeep Singh of Marwaha Poultry shared his firsthand experience, expressing great satisfaction with the performance of Newtrophyl Z+. He noted that incorporating the product into his layer farms has led to visible improvements and sustained performance.

Seminar Proceedings

- **Welcome Address:** The proceedings commenced with a warm welcome by Mr. Dheeraj (RR Animal Health Care Ltd.).
- **Vote of Thanks:** The event concluded with a vote of thanks by Mr. Vinod Mishra, who expressed gratitude to the delegates, the Layer Committee, and the speakers for a successful knowledge-sharing session.





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About RR Animal Health Care Ltd.

RR Animal Health Care Ltd. remains dedicated to providing "Unique Solutions" to the livestock sector. By focusing on the science of inflammation and gut health through products like Newtrophyl Z+, the company aims to help layer farmers optimize their yield and protect their bottom line.

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Breathing Life Back Into Flocks

The Silent Crisis of Poultry Respiratory Disease and the Promise of Phytogenic Solutions

Vamso

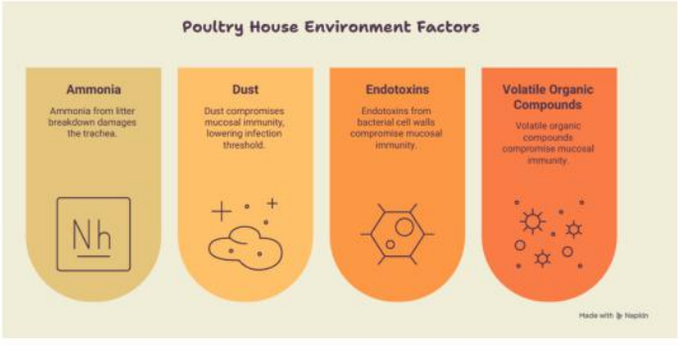
Dr. Manish Mukherjee

The Silent Crisis Draining Your Farm

Respiratory disease is one of the most economically punishing challenges in commercial poultry production. A single Infectious Bronchitis (IB) outbreak can spike mortality, collapse feed conversion ratios, and trigger mass condemnation at slaughter. Newcastle Disease (ND) brings international trade consequences. Chronic Respiratory Disease (CRD), caused by *Mycoplasma gallisepticum*, is subtler still — simmering undetected for weeks while silently eroding weight gain and egg output.

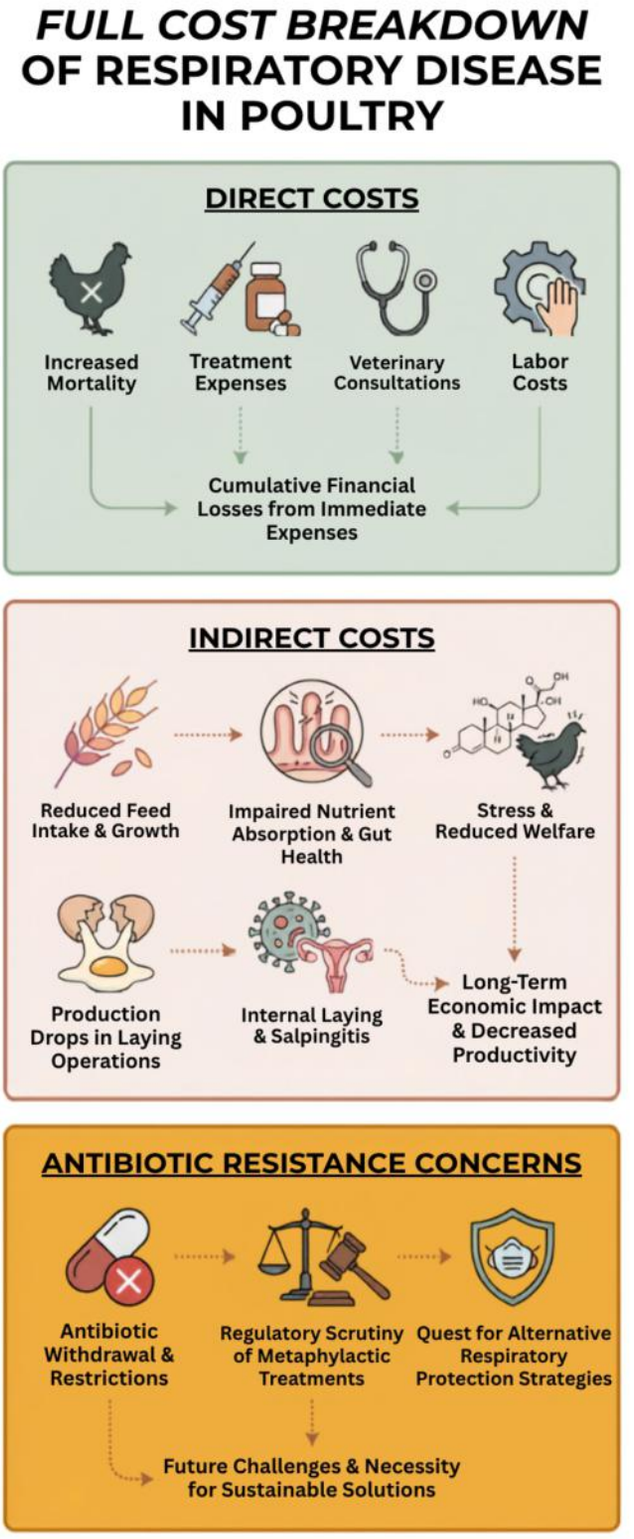
Birds are anatomically primed for rapid disease spread. Without a diaphragm, their air-sac system extends deep into the viscera and bones, meaning any pathogen entering the trachea can disseminate widely before clinical signs appear. Viral agents — IBV, NDV, Avian Influenza — strip the ciliated epithelium that guards the trachea, opening the door for secondary bacteria: *Mycoplasma gallisepticum*, *Escherichia coli*, and *Ornithobacterium rhinotracheale*.

The house environment makes things worse. Ammonia from wet litter directly erodes mucosal defences, even at concentrations producers consider normal. Dust and endotoxins lower the infection threshold further. The result: pathogens that would otherwise cause mild disease trigger serious, costly outbreaks.



The True Cost Goes Beyond Mortality

Visible losses — dead birds, vet bills, treatment costs — are just part of the damage. The hidden toll is often larger. Fever suppresses feed intake; damaged intestinal villi impair nutrient absorption for weeks post-recovery; elevated corticosteroids suppress immunity, leaving flocks vulnerable to the next challenge. In layers, even a brief respiratory event can trigger a production drop that never fully reverses, or the salpingitis and internal laying that IBV is notorious for causing.



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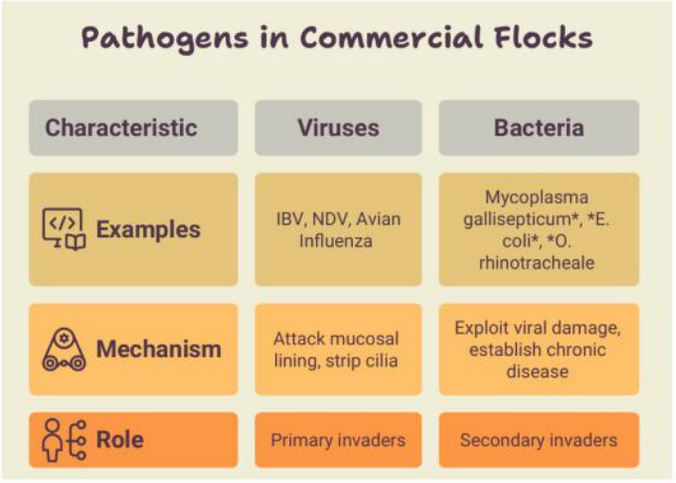

"The respiratory mucosa is the first battlefield. When ammonia, dust and pathogens strip it bare, the economic consequences follow within days."

Phytogenics: Science-Backed, Nature-Derived

Phytogenic solutions — formulated from therapeutic-grade ***essential oils*** and ***validated medicinal herbs*** — have moved firmly into mainstream poultry health management. Unlike antibiotics, which target a single bacterial pathway, essential oil bioactives (terpenoids, phenols) strike multiple cellular targets simultaneously. This polymodal action makes resistance virtually impossible to develop, explaining why these compounds have remained effective across millennia of plant-pathogen co-evolution.

A Six-Oil Synergy

Respro Plus (Vamso Biotec) has developed a solution that combines six therapeutic essential oils with a portfolio of Ayurvedic herbs. Each ingredient has a defined role; the formulation achieves outcomes no single oil could deliver alone.

The Ayurvedic Herbal Advantage

The essential oils are complemented by five validated Ayurvedic herbs that extend protection in ways essential oils alone cannot:

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- **Kapoor Kachri (Hedychium spicatum):** potent decongestant that clears accumulated exudate from the respiratory channel.
- **Pushkarmool (Inula racemosa):** antihistaminic, bronchodilatory, antiviral — tackles the allergic and inflammatory components of disease.
- **Tulsi (Ocimum tenuiflorum):** immunomodulatory, enhancing adaptive immune response to respiratory viral challenge.
- **Shilajit (Asphaltum punjabianum):** adaptogenic antistress agent supporting performance under heat stress and boosting systemic immunity.

How Essential Oils & Herbs Work in Synergy

The formulation delivers a six-dimensional mechanism of action, addressing every facet of the respiratory disease process simultaneously:

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3 — Pathogen Elimination
Polymodal action of thymol, eucalyptol & carvacrol targets viral and bacterial pathogens across multiple cellular sites.

4 — Mucosal Barrier Repair
Macrophage activation and mucosal immunity enhancement rebuild the first line of defence against reinfection.

5 — Anti-Inflammatory
Coordinated activity from lavender, eucalyptus & sage reduces tracheal and bronchial oedema — speeding recovery.

6 — Adaptogenic Support
Shilajit's adaptogenic properties maintain productive function under heat stress — a primary trigger of respiratory outbreaks.

Overall Respro Plus Provides Triple-Layer Defence: How It Works

Together, the oils and herbs deliver protection across three stages

TRIPLE-LAYER DEFENCE MODEL

How Respro Plus Tackles Respiratory Disease at Every Stage

1 BLOCK — Mucosal Barrier Restoration
Tulsi & immunomodulatory herbs activate macrophages and rebuild the first line of defence — restoring the ciliated epithelium that pathogens exploit.

2 DISRUPT — Targeted Antimicrobial Action
Thymol, eucalyptol & carvacrol attack viral and bacterial pathogens on multiple targets simultaneously — making resistance development highly unlikely.

3 RECOVER — Anti-Inflammatory & Adaptogenic Support
Lavender, eucalyptus, sage & Shilajit reduce tracheal oedema, speed recovery, and maintain productive function under heat and management stress.

Conclusion

Respiratory disease demands a multi-front response. The combination of therapeutic essential oils and validated Ayurvedic herbs in Respro Plus delivers exactly that — simultaneously clearing airways, eliminating pathogens, reducing inflammation, and rebuilding mucosal immunity. No withdrawal period, no resistance risk, and no specialist equipment. For producers facing the pressures of antibiotic stewardship and rising disease challenge, phytogenic respiratory solutions are no longer an alternative — they are an essential part of the modern health programme.

Vamso

"The future of poultry respiratory health management lies not in choosing between modern science and traditional knowledge, but in intelligently combining the best of both — for the benefit of flock health, producer economics, and consumer confidence alike."

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Dovoy Organizes Technical Seminar on "Application of Enzymes for Profitable Layer Farming" in Karnal, Haryana

As part of its continued commitment to advancing animal health and nutrition and supporting sustainable farm profitability, **Dovoy Animal Health** successfully organized a technical seminar on the topic **"Application of Enzymes for Profitable Layer Farming."** The session was led by **Mr. Anand Singh, Business Head - Dovoy Animal Health**, and witnessed enthusiastic participation from layer farmers, nutritionists, veterinarians, feed manufacturers, and industry stakeholders.

The seminar focused on the growing importance of enzymatic solutions and other feed additives in modern layer production systems, particularly in an environment characterized by rising feed costs, fluctuating raw material quality, and increasing pressure to improve production efficiency.

During the session, Mr. Anand Singh highlighted how feed enzymes such as **phytase, protease, xylanase, and multi-enzyme combinations** play a significant role in improving nutrient digestibility and maximizing feed utilization. He discussed that enzymes help in enhancing nutrient availability, providing better feed conversion ratio, improving performance, and overall bird health.

A key highlight of the seminar was the role of enzymes in improving **layer farm profitability**. Mr. Singh explained that by enhancing nutrient digestibility and feed utilization, enzymes help reduce feed costs, improve egg production and shell quality, and support consistent flock performance, ultimately lowering the cost per egg produced. He also emphasized the importance of selecting the right enzyme solutions based on feed composition and production goals. Beyond economic benefits, he highlighted that improved nutrient utilization reduces nutrient wastage and environmental impact, supporting more sustainable poultry production.

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Scan for more info

The interactive session provided attendees with practical recommendations for implementing advanced and innovative solutions and strategies in commercial layer operations. Real-world examples and field experiences were shared to demonstrate how enzyme supplementation can help producers navigate current industry challenges while enhancing profitability.

Speaking on the occasion, Mr. Anand Singh stated, *"As the poultry industry continues to evolve, enzyme technology will play an increasingly important role in improving feed efficiency, supporting bird performance, and enhancing farm profitability."*

The seminar concluded with an engaging question-and-answer session, allowing participants to discuss technical challenges and explore innovative approaches for improving layer productivity. Through initiatives such as these, **Dovoy Animal Health** continues to strengthen its commitment to delivering science-backed solutions that help poultry producers achieve greater efficiency, performance, and profitability.

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Revolutionizing Indian Feed Manufacturing: The Famsun KN Series Pellet Mills

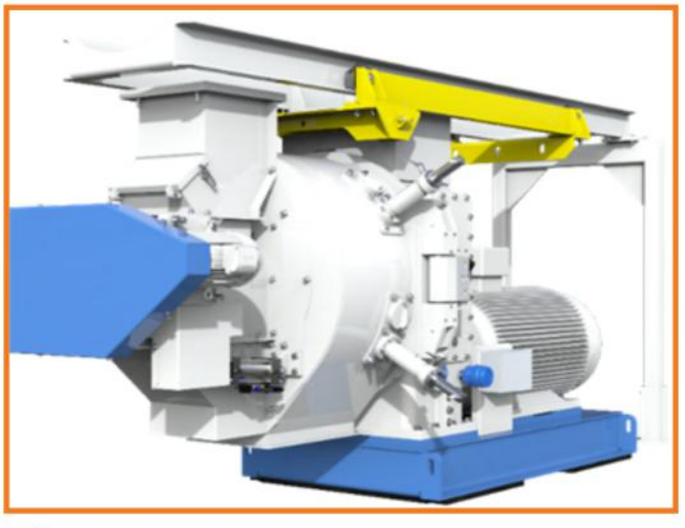
The Indian livestock and dairy industries are undergoing rapid modernization. With the government's immense focus on increasing milk yields and enhancing livestock productivity, the demand for high-quality, nutritionally balanced feed has never been greater. However, Indian feed manufacturers face a distinct set of challenges: skyrocketing raw material and energy costs, the tricky handling of highly fibrous ruminant feed ingredients, and the continuous need for better pellet durability.

To help manufacturers navigate these challenges, Famsun introduces the KN Series Pellet Mills— a breakthrough engineered to redefine efficiency, durability, and pellet quality in the Indian market.

Built on a Decade of Pelletizing Excellence

For over a decade, Famsun's K series pellet mills have set benchmarks globally, proving their mettle through intensive market testing and earning widespread industry recognition. Building upon this legacy of engineering excellence, Famsun developed the KN Series Pellet Mills specifically to meet a wider range of customer demands, with a laser-focused specialization in ruminant and fibrous feed production.

Designed to deliver ultra-stable production, exceptional pellet structural integrity, and prolonged spare part longevity, the KN series offers an impressive capacity range spanning from 6 to 40 TPH (Tons Per Hour). This makes it an ideal fit for both expanding mid-sized mills and large-scale industrial commercial feed plants across India.



Designed Around Real-World Feed Mill Requirements

Modern Indian feed millers require machinery that does more than just aggregate ingredients; they need systems that directly impact the bottom line. The KN Series is designed to address four critical customer pain points:

- **Efficient Handling of Fibrous Material:** Ruminant feed often uses bulky, low-bulk-density raw materials that are notoriously difficult to process smoothly.
- **Reduced Energy Bills:** With commercial electricity tariffs fluctuating across Indian states, lowering the cost per ton of electricity is paramount.
- **Minimal Operational Downtime:** Frequent maintenance and component wear disrupt supply chains and cut into profit margins.
- **Stringent Safety Protocols:** Ensuring a hazard-free work environment for plant operators with robust, fail-safe machinery.

Product Highlights

The Famsun KN Series integrates world-class manufacturing technologies with user-centric design features, establishing itself as a highly reliable asset for modern feed mills.

High Capacity, Low Energy Consumption

Globally Leading Consumption Levels: Keeps operating costs at an industry low:

- Ruminant Feed Energy Consumption: < 15 Kw . h/T
- Poultry Feed Energy Consumption: < 12 Kw . h/T

Optional Force Feeder: Specially engineered for easy, consistent feeding of low bulkdensity materials, avoiding blockages and maximizing throughput.

High Pellet Quality

Refined Pelleting Technology: Holistic improvements from the internal chamber structure and deflector angles to the roller feeding mechanisms ensure unmatched uniform pellet density.

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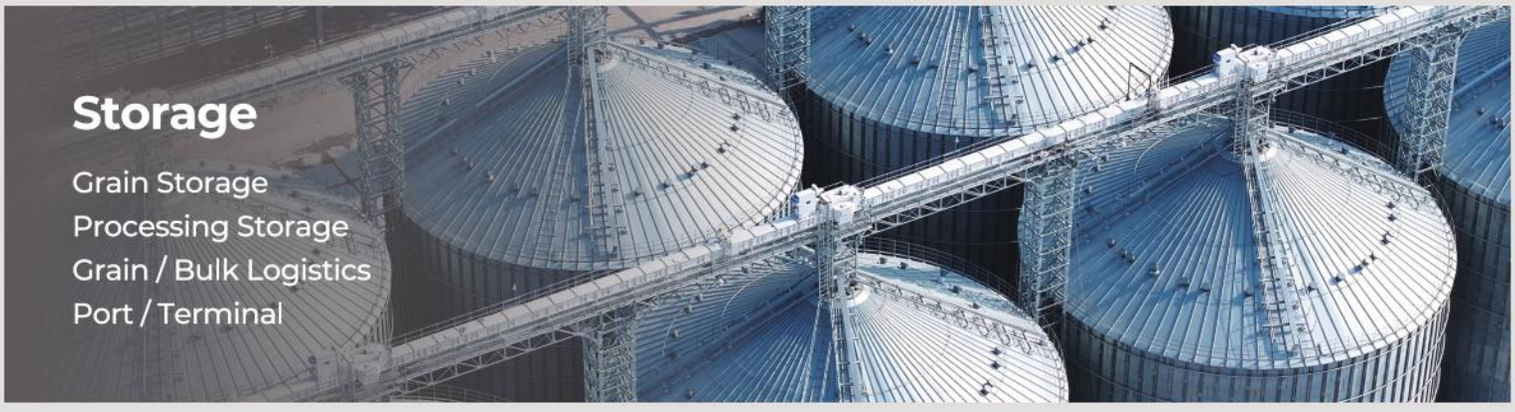

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Enhanced Power Delivery: Features 15% more power supply to the unit die area. This high power guarantees excellent compression ratios, resulting in durable pellets with a high Pellet Durability Index (PDI)—greatly minimizing fines during bagging and transit across Indian roads.

High Stability

Global Premium Supply Chain: Built using components from top-tier global suppliers such as SEW, SKF, ABB, and Honeywell, guaranteeing long-term electronic and mechanical reliability.

Precision Manufacturing: Produced using state-of-the-art heavy machinery to ensure high structural strength and unwavering stability under heavy loads.

High Safety and Usability

CE Standards Compliant: Safety is non-negotiable. The machinery features 10+ safety switches and sensors, ensuring all operation and maintenance procedures are up to strict international safety standards.

Smart & Ergonomic Labor Savings: Comes standard with efficient configurations like automatic lubrication and an electric die-lifting crane system to eliminate back-breaking manual labor. Smart Control System (Optional): Features a "push to start" function that automates the pelleting process and eliminates human operational errors.

Low Operating Cost

Extended Component Lifespan: Specially designed wear-resistant picks and deflectors mean fewer spare part replacements over time.

Hassle-Free Maintenance: Features a self-cleaning conditioner housing and rotor, minimizing residual feed buildup, preventing cross-contamination, and drastically reducing manual cleaning hours.

The KN Series is available in seven models, allowing feed manufacturers to select the configuration best suited to their production requirements.

FAMSUN KN SERIES PRODUCT PARAMETERS

Model	Die Size (Dia. ×Wid)	Power kW	Capacity TPH	A (mm)	A' (mm)	B (mm)	C (mm)
Kn1	535×160	160	06-11	3906	3640	1552	1905
Kn2	575×190	200	10-15	3940	3640	1587	1840
Kn3	685×180	250	15-20	3940	3640	1689	1975
Kn4	785×210	315	20-25	5127	4720	2054	2065
Kn5	885×230	355	25-30	5127	4800	2056	2065
Kn6	985×260	450	30-35	5127	5100	2486	2506
Kn7	1070×330	500	35-40	5430	5100	2486	2506

As India's feed industry continues to evolve toward larger capacities, greater automation, and higher efficiency standards, the demand for advanced pelleting technology will only increase. Feed manufacturers require equipment capable of delivering not only higher production volumes but also lower operating costs, better product quality, and greater process reliability.

The FAMSUN KN Series Pellet Mill has been developed precisely for this future. Combining specialized ruminant feed expertise, advanced pelleting technology, premium components, intelligent automation, and industry-leading energy efficiency, it provides feed manufacturers with a powerful platform for sustainable growth and long-term competitiveness.

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At this platform, Symbio Nutrients proudly presented its breakthrough **DiformaxSYM**, an advanced **sodium diformate based antimicrobial** for control of enteric pathogens, improved intestinal integrity, better feed efficiency and enhanced production economics. A key milestone highlighted was that ***Symbio Nutrients is the only company in India to manufacture sodium diformate domestically***, underscoring its technological leadership, focus on indigenous innovation and reduced dependence on imported feed additive technologies.

The participation of Symbio and Hargun emphasized their shared vision of being long term technology partners rather than mere suppliers. With solutions like **DiformaxSYM, Nano-traceminerals** and **AML40** from Symbio Nutrients, along with **high-quality processed oils** from Hargun Agro that support energy density, palatability and feed efficiency, both companies are well positioned to drive the next generation of science led, sustainable poultry production in not only in India, but across the globe.

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ARTICLE

Pathophysiology of Heat Stress in Poultry

Prof. Dr.R.N.Sreenivas Gowda

Heat stress in poultry is a physiological condition that occurs when a bird's body heat production exceeds its ability to dissipate that heat to the environment. This happens when ambient temperatures rise above the **thermoneutral zone**, typically between 18°C and 25°C (64°F-77°F).

Why Poultry Are More Prone to Heat Stress?

Poultry are significantly more susceptible to heat than many other animals due to several unique biological factors:

- **Lack of Sweat Glands:** Unlike humans or some other livestock, birds cannot sweat to cool down through skin evaporation.
- **Insulating Feathers:** Feathers act as a powerful insulator that traps heat against the body, making it difficult for internal heat to escape.
- **High Core Temperature:** Poultry naturally have a very high body temperature, typically between **41°C and 42°C (105°F-107°F),** leaving a very small margin for error before reaching lethal limits.
- **High Metabolic Rate:** Modern commercial breeds, particularly fast-growing broilers, have extremely high metabolic rates that generate massive amounts of internal body heat.
- **Limited Surface Area:** As birds grow larger, their surface area relative to their body weight decreases, providing less area for heat to dissipate via radiation or convection.

Physiological alterations in heat stress

Heat stress in poultry triggers severe physiological, endocrine, and metabolic changes, including elevated body temperature, respiratory alkalosis, oxidative stress, and suppressed immunity. Birds exhibit high panting rates, reduced feed intake, increased water consumption, and reduced performance, leading to high mortality. Key, metabolic adjustments include increased corticosterone, reduced thyroid hormone (T3/T4) levels, and, impaired gut function. The following changes take place in the body:

a) Respiratory and Acid-Base Imbalance

- **Panting (Thermal Polypnea):** Birds increase their respiratory rate significantly to enhance evaporative cooling.
- **Respiratory Alkalosis:** Excessive panting leads to the over-exhalation of (hypocapnia). This raises blood pH (alkalosis), which the body compensates for by excreting bicarbonate ions (HCO3) through the kidneys, eventually causing metabolic acidosis.
- **Mineral Depletion:** The excretion of bicarbonate is accompanied by the loss of essential electrolytes like sodium (Na+) and potassium (K+).

b). Neuroendocrine and Hormonal Disruptions

- **HPA Axis Activation:** Thermal stress stimulates the Hypothalamic-Pituitary-Adrenal (HPA) axis, leading to a marked increase in circulating **corticosterone** (the primary stress hormone in birds).
- **SAM Axis Activation:** The Sympathoadrenal Medullary (SAM) axis releases catecholamines (epinephrine and norepinephrine), which increase heart rate, blood pressure, and respiratory rate to aid heat dissipation.
- **Thyroid Suppression:** Levels of thyroxine (T4) and triiodothyronine (T3) typically decrease. This "hypothyroid-like" state is an adaptive mechanism to lower basal metabolic rate and reduce internal heat production.
- **Reproductive Hormones:** Decreased secretion of GnRH, LH, and FSH leads to reduced ovarian function in layers and impaired spermatogenesis in roosters.

c). Cellular and Oxidative Stress

- **Heat Shock Proteins (HSPs):** Cells rapidly upregulate the production of HSPs (especially **HSP70** and **HSP90)** which act as molecular chaperones to protect and refold proteins damaged by heat.
- **Oxidative Damage:** High temperatures induce mitochondrial dysfunction, leading to an overproduction of **Reactive Oxygen Species (ROS).** This causes lipid peroxidation, protein degradation, and DNA damage in tissues like the liver and gut.

d). Gastrointestinal and Organ Damage

- **Leaky Gut Syndrome:** Blood is diverted from internal organs to the skin for cooling (hypoperfusion), leading to hypoxia in the gut. This weakens tight junction proteins, increasing intestinal permeability and allowing pathogens or endotoxins (LPS) into the bloodstream.

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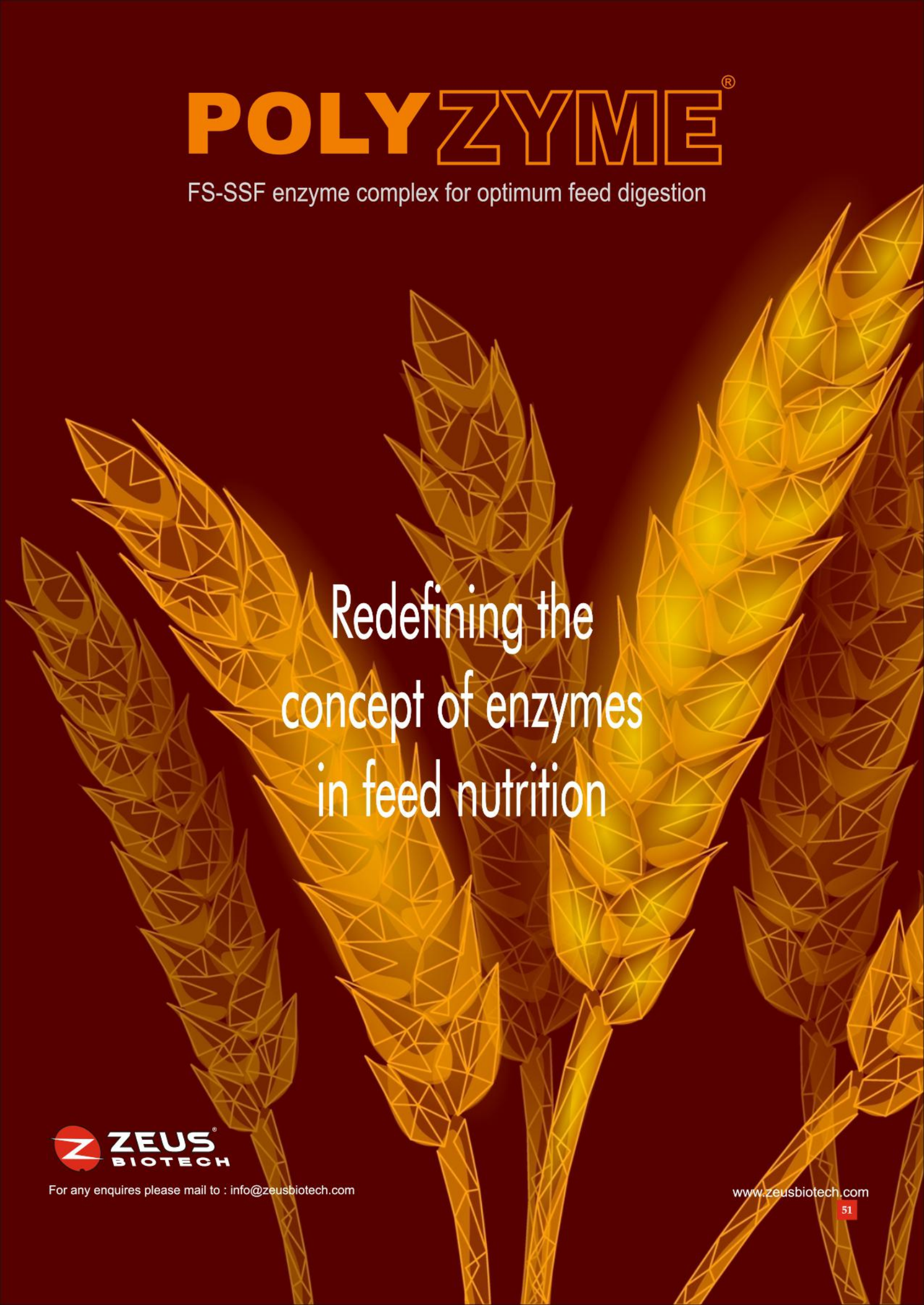

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- **Organ Hyperplasia:** Chronic stress can cause inflammatory cellular hyperplasia and lesions in the brain, heart, and liver.
- **Immunosuppression:** Heat stress leads to the atrophy of lymphoid organs (spleen, thymus, bursa of Fabricius), reduced white blood cell counts, and a higher **Heterophil-to-Lymphocyte (H/L) ratio,** which is a primary indicator of stress.

e). Metabolic Shifts

- **Protein Breakdown:** Corticosterone promotes gluconeogenesis, causing the breakdown of skeletal muscle (catabolism) to provide energy for survival.
- **Lipid Deposition:** Paradoxically, heat-stressed birds often show increased fat deposition (carcass adiposity) and reduced fat mobilization due to suppressed lipid metabolism.

Diagnosis of Heat Stress

Diagnosis of heat stress (HS) in poultry is possible through a combination of environmental monitoring, behavioral observation, and physiological or biochemical assessments. While traditional methods rely on detecting symptoms like **panting** and **reduced feed intake,** modern precision technologies—including **infrared thermography** and **AI-powered video analysis**—allow for more objective and early detection.

1. Behavioral Indicators

- Monitoring bird behavior is the most immediate way to identify heat stress on a farm.
- **Panting (Thermal Polypnea):** Rapid, open-beak breathing used to increase evaporative cooling.
- **Postural Changes:** Lifting or spreading wings to expose unfeathered areas and increase surface area for heat loss.
- **Reduced Activity:** Birds become lethargic, spend more time resting, and may squat close to the ground (grounding) to transfer heat to cooler litter.
- **Altered Intake Patterns:** A sharp increase in **water consumption** paired with a significant decrease in **feed intake.**
- **Isolation or Crowding:** Birds may isolate themselves during severe stress or crowd near water sources and fans.

2. Physiological and Clinical Signs

Clinical signs of heat stress in poultry include rapid panting (open-beak breathing), wing spreading to maximize heat loss, increased water consumption, reduced feed intake, and lethargy. Birds may also exhibit pale combs/wattles, diarrhea, and decreased egg production or quality. In severe cases, heat stress causes prostration, convulsions, and high mortality.

Clinical evaluation reveals internal imbalances caused by the bird's thermoregulatory efforts.

- **Rectal Temperature:** A n increase in core body temperature, often rising above 42°C in stressed broilers.
- **Comb and Wattle Appearance:** These areas may appear bright red due to increased blood flow (vasodilation) to the surface for cooling.
- **Respiratory Alkalosis:** Excessive panting leads to a loss of CO2, raising blood pH (alkalinity). This can be diagnosed via blood gas analysis.
- **Production Drops:** A sudden decline in **egg production,** reduced **eggshell quality** (thin or soft shells), or stunted **weight gain** in broilers.

3. Pathological alterations in Heat stress

Heat stress in poultry triggers a series of pathological alterations across multiple organ systems, primarily driven by oxidative stress, hypoxia (oxygen deficiency), and inflammatory responses. These changes range from gross macroscopic findings (visible to the naked eye) to microscopic cellular damage.

Gross Pathological Changes

Macroscopic examination of heat-stressed poultry often reveals systemic signs of overheating and circulatory failure:

- **Muscles:** Skeletal muscles frequently exhibit a **"cooked-meat" appearance,** characterized by pale, whitish coloration and localized hemorrhages. The breast and thigh muscles may show dark red congested areas alongside these pale spots.
- **Internal Organs:** Common findings include **hyperemia** (excess blood) and congestion in the liver, kidneys, and lungs. The liver may appear enlarged (hepatomegaly), fragile, or discolored with a yellowish hue.
- **Lungs:** Often severely congested and **edematous** (fluid-filled), which can lead to cardiorespiratory failure.
- **Digestive Tract:** The intestines may show segmentally visible bleeding on the mucosa and moderate congestion.

Microscopic and Histopathological Alterations

Microscopic analysis highlights cellular-level damage across various tissues:

- **Liver:** Features include **vacuolar and hydropic degeneration,** centrilobular necrosis (cell death), and fibrosis around portal veins. Fatty changes (steatosis) are a hallmark of chronic heat stress.
- **Intestines:** Significant **villus atrophy** occurs, with reduced villi height and increased crypt depth, which impairs nutrient absorption. The intestinal barrier often becomes "leaky" due to the disruption of **tight junction proteins.**

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- **Immune Organs:** Lymphoid organs like the **bursa of Fabricius, thymus, and spleen** undergo marked atrophy. Histologically, this is characterized by **lymphoid depletion,** necrosis, and architectural distortion.
- **Heart:** Pathologies include **myofibrillar degeneration,** petechial hemorrhages, and inflammatory cellular hyperplasia. Severe cases may show Zenker's necrosis in cardiac muscle fibers.
- **Kidneys:** Alterations include **tubular degeneration,** glomerular atrophy, and intertubular hemorrhages. Severe damage can result in **karyopyknosis** (shrunken nuclei) and complete cell death.

Brain: Congestion of blood vessels, **Wallerian degeneration** of brain tissue, and in some cases, meningitis or inflammatory hyperplasia.

4. Laboratory and Biochemical Biomarkers

Scientific and laboratory-based diagnosis uses specific biomarkers to confirm the severity of stress.

Physiological and Biomarker Indicators

These structural changes are accompanied by measurable physiological shifts:

- **Blood Profile:** An increase in the **Heterophil to Lymphocyte (H/L)** ratio is a standard biomarker for stress.
- **Hormonal Shifts:** Elevated levels of **corticosterone** (the primary stress hormone in birds) and a decrease in thyroid hormones **(T3 and T4)** are common.

Heat Shock Proteins: Rapid upregulation of **HSP70** occurs as a protective cellular response to repair damaged proteins

Hormonal Levels: Elevated **corticosterone** (the primary stress hormone in poultry) in plasma is a dependable indicator of HS.

- **Blood Chemistry:**
  - **H/L Ratio:** An increase in the **heterophil to lymphocyte ratio** is a widely accepted measure of stress.
  - **Electrolyte Imbalance:** Decreased levels of potassium (K+) and sodium (Na+).
  - **Thyroid Hormones:** A reduction in **Triiodothyronine (T3)** levels is often observed as the bird attempts to lower its metabolic rate.
- **Specific Protein Biomarkers:**
  - **XDH (Xanthine Dehydrogenase):** Elevated in serum during injury exacerbation phases.
  - **POSTN (Periostin):** Indicates injury remission or death resistance phases.
  - **HSP90 & HSP70:** Increased levels of **heat shock proteins** in serum and tissues are classic indicators of environmental stress..

5. Modern Monitoring Technologies

Newer methods provide non-invasive, real-time diagnostic data:

- **Infrared Thermography (IRT):** Measures surface temperatures; the **comb and wattle** are the most reliable thermographic markers for HS.
- **AI Video Analysis:** Automated systems can now detect "open-mouth breathing" (panting) and wing-spreading behaviors with high accuracy using deep learning models.
- **Environmental Sensors:** Monitoring the **Temperature-Humidity Index (THI)** or "Humidex" provides an indirect but early warning of when conditions are likely to induce stress.

Conclusion

Heat stress in poultry disrupts homeostasis through physiological, behavioral, and cellular changes, resulting in reduced feed intake, high mortality, and poor production. Key mechanisms include respiratory alkalosis from panting, nutrient deficiency due to reduced intake, oxidative stress, and impaired gut barrier function ("leaky gut") caused by reduced blood flow to internal organs.

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YOUR INTERNATIONAL EXPERTS

DR. WILMER JAVIER PACHECO

Extension Specialist and Associate Professor, Department of Poultry Science, Auburn University

Dr. Wilmer Pacheco was born in Honduras where he obtained a BS in Food Science in 2005. Shortly after graduation, Dr. Pacheco began a feed mill manager training program with Murphy Brown, LLC in Laurinburg, North Carolina where he was responsible for overseeing the production of approximately 10,000 tons of pellet feed per week. In June 2009, Dr. Pacheco was awarded a fellowship in the Department of Poultry at North Carolina State University, where he earned his Master's in Poultry Science and his Ph.D. in Physiology and Nutrition. Currently, Dr. Pacheco is an Associate Professor and Extension Specialist at Auburn University in the State of Alabama. His research activities are focused on understanding the interrelationships between feed processing and nutrition on broiler performance. Additionally, Dr. Pacheco conducts research on nutrition strategies to reduce production costs, improve broiler performance, and nutrient digestibility. Dr. Pacheco is lead or supporting author of 32 research articles and 88 news articles primarily in Feedstuffs magazine, which is the leading source of news for animal agriculture in the United States with 12,500 accredited subscribers. Dr. Pacheco has been invited to give more than 165 presentations in 16 countries, has served as chair or member of 25 graduate student committees, and has mentored 21 visiting scholars from 12 countries.

YOUR WEEKLY CHECK-IN-NATIONAL EXPERTS

DR. ALLAPPA SHIVAPPA DARUR

ALLAPPA SHIVAPPA DARUR (Dr. Darur) - has 34 years' experience in areas of broiler breeding, hatchery management and commercial layers. He worked on long term and short-term inputs for operations and design and also has executed efficiencies for breeding and building hatchery infrastructure. He worked for Godrej Tyson Foods Limited as a 'Breeding and hatchery operation Head' at pan India level. He created long term and short-term planning and budgets for assessing operational performances. He lead business operations, inputting strategic vision and long-range planning. He is well versed with statistical analyses of data used for operational purposes and helped forecast team needs. At Godrej Agrovet he also served as a senior officer in-charge of a broiler breeder unit and took care of South India breeder and hatchery operations.

Before joining Godrej Agrovet he served as a technical expert for commercial layers in Hospet, Koppal and Bellary area (Karnataka) for Sri Krishnadevaraya Hatcheries. Key responsibilities involved health and performance aspects of both broiler and layer breeders. With his interventions he helped reduce process bottlenecks by training and coaching employees on practices, procedures and performance strategies.

At Bangalore Fort Farms he was responsible for performance and resource management of 125,000 commercial layers and helped formulated least cost feed thus reducing table egg cost. He was also responsible for health and performance of 70,000 commercial layers at the Fort Farms. His other assignments were managing Poona Pearls Samrat 2000 breeder and hatchery operations; providing tech sales services to help chick sales at South West Pearls Hatcheries.

He has attended two weeks of Cobb School training at Springdale in 2010 and was honoured with IVPI's Best Veterinarian award for the service to poultry industry. He has a Bachelor's degree in Veterinary Sciences & A.H from Veterinary College, Bangalore in 1988 and also holds a Master of Business Administration degree in Human Resources from Indira Gandhi National Open University in 2000.

WHAT SEC MEMBERS HAVE TO SAY

By Sreenivasarao Pagolu

Sr. General Manager - Operations, The Waterbase Limited

The India SEC Feed Milling Course provided valuable insights into feed formulation, process optimization, quality control, and operational safety. As an operations professional in feed manufacturing, I found the course highly relevant and practical.

The expert-led sessions, industry best practices, and real-world examples enhanced my understanding of modern feed milling technologies and process management. The interactive learning approach helped bridge the gap between theory and practical application.

Overall, the program strengthened my technical knowledge and provided useful tools to improve efficiency, quality, and productivity in feed manufacturing operations. I highly recommend it to industry professionals seeking continuous growth and excellence.

Smarter Butyrate Delivery for modern poultry: Better gut health, better performance

By Dr. Madri Brink, Sopaphan Pruekvimolphan

Modern poultry production is evolving toward systems that demand both high efficiency and reduced dependence on antibiotic growth promoters. Under these conditions, intestinal health has become the central driver of profitability. Among the available nutritional tools to support gut health, butyric acid and its derivatives have proven highly effective. Butyrate is a key energy source for enterocytes, supporting rapid intestinal renewal. It also improves the villus-to-crypt ratio, enhancing nutrient absorption. Butyrate also plays a role in strengthening tight junction integrity, modulates NF-κB-mediated inflammation (cytokine production), and stimulates antimicrobial peptide production, thereby reinforcing host defense.

Different forms of butyric acid (salts, coated salts, and butyric acid glycerides) are used in poultry nutrition, each differing in efficacy, bioavailability, stability, and release within the gastrointestinal tract.

- Calcium or sodium salts form of butyric acid have free-flowing characteristics, easing their inclusion in compound feed, however, the antimicrobial activity of butyric acid salts is limited to the upper gastrointestinal tract (GIT).
- Encapsulated/coated form with vegetable fats prevents butyric acid from being prematurely absorbed in the upper digestive tract so it can reach the hindgut and cecum.
- Butyric acid glycerides form where butyric acid can be combined with glycerol, results in mono-, di-, or triacylglycerol forms. These forms of the acid are released only in the presence of pancreatic lipase in the small intestine, ensuring a more controlled release of butyric acid.
    - Among this group, **Tributyrin (TB)** is generally considered more effective and practical than mono- or di-butyrin in commercial poultry feeds, delivering a much higher concentration of butyric acid per molecule.

Structure of tributyrin and its release kinetics

Tributyrin is the tri-ester of glycerol and butyric acid, meaning that one molecule of glycerol is esterified with three molecules of butyrate (*Figure 1*). The release kinetics could be estimated as follows:

1) **Stomach (crop-proventriculus-gizzard):** None, or very limited: < 5% (because TB requires enzymatic degradation, it can resist gastric degradation).
2) **Small intestine (proximal & distal):** 70-80% (because it requires enzymatic digestion by pancreatic lipase, hydrolysis mainly occurs in small intestine).
3) **Hindgut (cecum & colon):** 20-25% (its gradual lipolysis allows active butyrate to reach the distal gut).

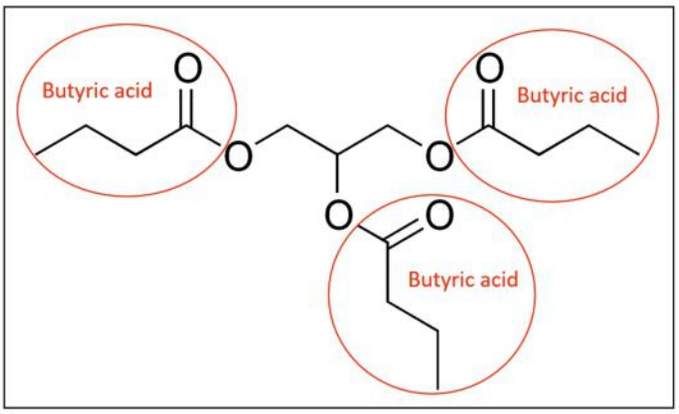


Figure 1. Tributyrin: Three butyrate molecules on a glycerol backbone.

This targeted release mechanism provides a key advantage over both unprotected and coated butyrate. Free butyrate is absorbed very fast in the upper intestinal tract, limiting its availability in distal intestinal segments. The release of butyrate from coated sources depends on coating quantity and integrity, which may vary under different feed processing and environmental conditions. In contrast, the release of tributyrin relies on enzymatic digestion by pancreatic lipase, ensuring a more predictable and physiologically controlled release profile. This results in more consistent biological responses, particularly in villi development, epithelial renewal, and intestinal barrier function.

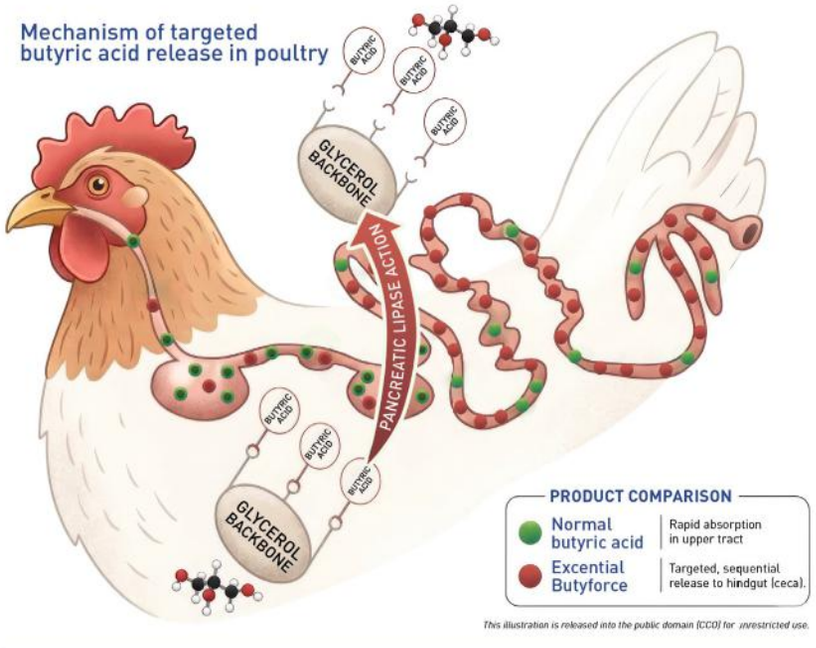
Proven efficacy in broilers, layers, and breeders

In a 42-day broiler study by Hu *et al.*, (2021), 540 Arbor Acres birds were randomly assigned to five treatments, each with 12 replicates: basal diet (Control) and basal diet with TB at doses of 0.23, 0.46, 0.92, and 1.84 g/kg in TB1, TB2, TB3, and TB4, respectively. Tributyrin supplementation significantly improved average daily gain (Control vs. TB4: $P < 0.05$) and feed conversion ratio (Control vs. TB3 and TB4; $P < 0.05$) (*Figure 2*). Furthermore, significant improvements in jejunum's villus height (VH), villus-to-crypt ratio (V/C) and ileum's V/C were observed in all TB groups ($P < 0.05$), while duodenum's VH and V/C were numerically higher in all TB groups, compared to Control. Tributyrin supplementation also numerically increased population of *Lactobacillus* and *Bacillus* in ileal and cecal digesta in all TB groups, with most of significant differences seen in TB3 and TB4 groups, compared to Control ($P < 0.05$). Coliforms population in cecal digesta were significantly lower in TB3 and TB4, compared to Control ($P < 0.05$).

Powering gut health with targeted butyric acid delivery

Excential Butyforce is a tributyrin-based solution formulated to deliver butyric acid efficiently from the small intestine toward the distal gut, supporting gut health, intestinal integrity, villus development, and animal performance.

ORFFA



Tributyrin can resist gastric degradation. Release of butyric acid is subjected to lipase-mediated hydrolysis which mainly occurs in small intestine. Released butyric acid is active till the end of hindgut of the birds.

- Improve gut integrity
- Enhance nutrient absorption
- Energy source for enterocytes
- Support gut health and performance
- Stable in pellet feed
- No odor issues, non-hygroscopic, free-flowing

Short chain fatty acid (SCFA) concentrations in the ileal and cecal digesta in all TB groups were either numerically or significantly ($P < 0.05$) higher than those from Control group (*Figure 3*).

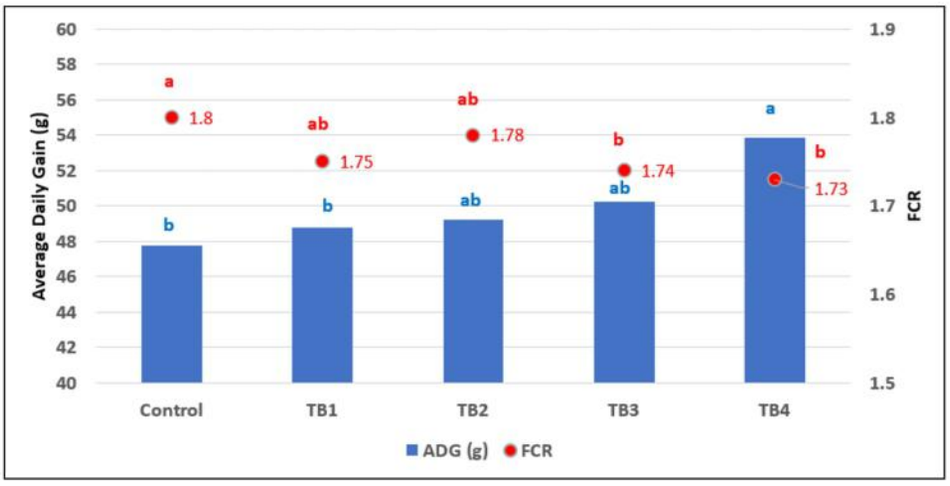
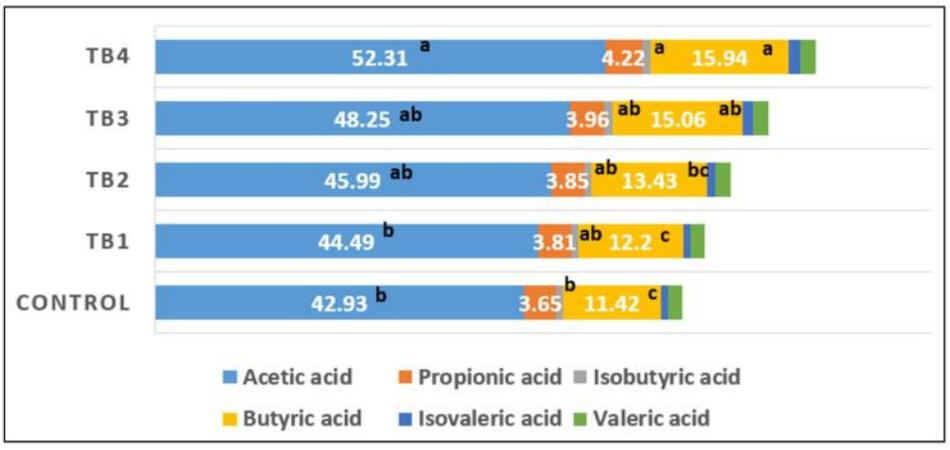


Figure 2. Effect of tributyrin (TB) on growth performance and feed conversion ratio (FCR). Control=basal diet; TB1=basal diet supplemented with 0.23 g/kg TB; TB2=basal diet supplemented with 0.46 g/kg TB; TB3=basal diet supplemented with 0.92 g/kg TB; TB4=basal diet supplemented with 1.84 g/kg TB. [a,b] Mean values with different superscript letters were significantly different ($P < 0.05$).

Figure 3. Effect of tributyrin (TB) on short chain fatty acids concentration (µmol/g fresh digesta) in cecal digesta in broilers at 42 days. [a,b] Mean values with different superscript letters were significantly different ($P < 0.05$). Numerical data shown in the figure are acetic, propionic, and butyric acid only for legibility.



Another 42-day Arbor Acres broiler study by Hu *et al.*, (2022) with 432 birds confirmed the value of tributyrin. Graded supplementation of a tributyrin product at 0.5, 1.0, and 2.0 g/kg improved growth performance (lower FCR in all feeding phases: 0-21, 22-42, and 0-42 days in 1.0 and 2.0 g/kg TB groups; $P < 0.05$), and better carcass traits (higher eviscerated carcass rate and lower abdominal fat yield than those in the control group ($P < 0.05$). Dietary TB groups improved the kidney, spleen, thymus, and bursa indices ($P < 0.05$) compared with those in the Control group. In addition, the white and red blood cell counts, platelet count, hemoglobin and hematocrit at d 21, and platelet count at d 42 were improved ($P < 0.05$), with those in 2.0 g/kg TB group being most affected. These findings indicate that tributyrin acts beyond the gut, supporting systemic physiology and overall bird robustness.

The benefits of tributyrin also extend to layers and breeders. Better intestinal health supports more efficient allocation of absorbed nutrients toward productive functions, not only maintenance, intestinal integrity, immune response, but also reproduction and egg formation. In broiler breeder study by Wang *et al.*, (2021), dietary tributyrin (1 g/kg) improved reproductive performance and egg characteristics, increasing egg weight, albumen height, Haugh unit, and ovarian antioxidant capacity (*Table 1*), while reducing malondialdehyde and ovarian cell apoptosis.

Table 1. Effect of tributyrin on egg production, reproductive performance, and ovary antioxidant capacity of broiler breeders.

Treatment	Laying rate, %	Egg weight, g	FCR	Albumin height, mm	Haugh unit	SOD	T-AOC	MDA
Control	78.58[a]	64.10[b]	3.12[a]	6.12[b]	74.60[b]	181.41	0.60[b]	1.65[a]
Tributyrin	78.67[a]	66.99[a]	2.92[a]	6.61[a]	78.51[a]	191.03	0.78[a]	1.23[b]
P-value	<0.01	<0.01	0.05	0.02	0.05	0.55	0.01	0.05

Key considerations

A wide range of commercial butyric acid products are available, including butyric acid salts, coated salts, and butyrate glycerides such as tributyrin. While all forms can support gut health, intestinal integrity, and performance, they differ markedly in active butyric acid level, site of release, stability, and handling properties. Key considerations include whether the butyrate reaches the target intestinal segment, the level of butyric acid effectively delivered, and how consistent the product performs after pelleting process. Coating quality, odor, volatility, and the whole feed processing process can all influence practical value beyond the label claim. Overall, TB and coated BA are generally preferred when targeted delivery, ease of handling, and processing practicality are priorities. The table below summarizes the main advantages and concerns of each product type.

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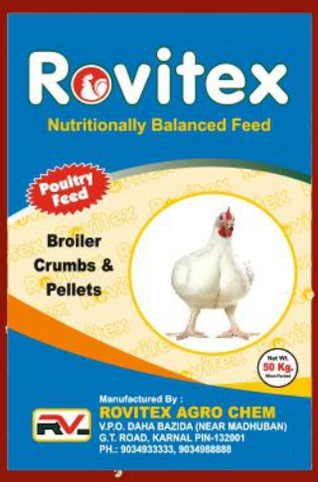
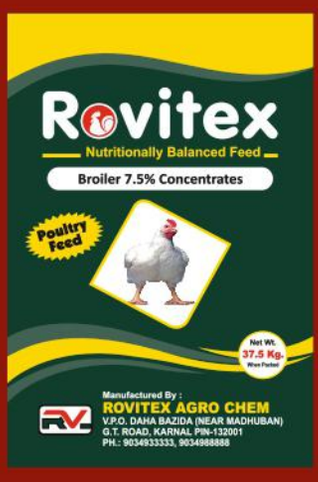
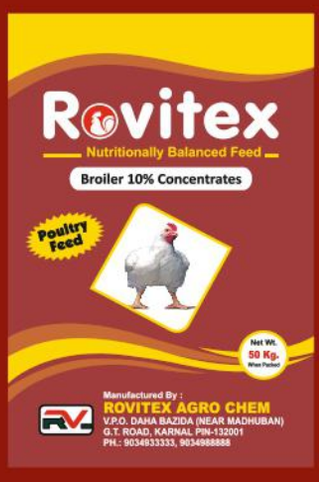
- Broiler 1.5% Concentrates

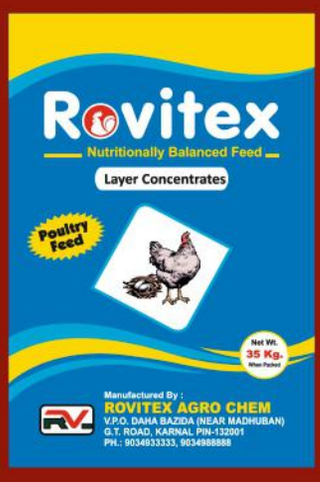
Layer Concentrates:
- Layer 5% Concentrates
- Layer 10% Concentrates
- Layer 25% Concentrates
- Layer 35% Concentrates

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









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E-mail: rovitexagrochem2016@gmail.com, lamba122117@gmail.com

Dealers enquiries solicited from unrepresented areas

Category	Tributyrin (TB)	Coated butyric acid salts	Unprotected butyric acid salts
Molecule and delivery mechanism	Advantage: Glycerol tri-ester releases butyrate via lipase digestion for controlled intestinal delivery. Consideration: Influenced by lipid digestion.	Advantage: Protected form for gradual gastrointestinal release. Consideration: Release kinetic varies with coating and processing methods.	Advantage: Highest immediate butyric acid level. Consideration: Rapid upper-gut absorption limits distal delivery.
Butyric acid equivalence / active content	Advantage: High butyrate equivalence; 60% TB provides about 52.45% butyric acid equivalent. Consideration: Ensure effective dosage is met.	Advantage: High BA content products can deliver more total butyric acid. Consideration: Lower butyrate equivalence than TB.	Advantage: 100% butyric acid. Consideration: High active BA content does not ensure distal delivery.
Gut morphology and microbial effects	Advantage: Studies show higher villus height, villus: crypt ratio, beneficial bacteria, and SCFAs concentration. Consideration: Ensure effective dosage is met.	Advantage: Improves GIT morphology, beneficial bacteria, and SCFAs concentration. Consideration: Response varies with coating technique and release profile.	Advantage: Acidification and antimicrobial effects in the upper gut. Consideration: Less reliable delivery to distal intestinal sites.
Handling and processing	Advantage: No coating step, less odor, easier formulation and handling than free BA. Consideration: Choose high purity for the best quality product.	Advantage: Established and widely used technology. Less odor. Consideration: Coating can dilute active content and add complexity.	Advantage: Simple chemistry with no coating cost. Consideration: Strong unpleasant odor, volatility, and handling challenges.

Conclusion

As poultry production moves toward greater efficiency, resilience, and reduced antibiotic dependence, the value of targeted butyrate delivery becomes increasingly clear. The evidence presented in this article shows that tributyrin provides a controlled and gradual release of butyric acid that supports intestinal integrity, microbial balance, nutrient utilization, and productive performance across broilers, layers, and breeders. Tributyrin combines strong biological efficacy with good handling properties, formulation flexibility, and consistency under modern feed processing conditions.

References available upon request

By Dr. Madri Brink
Global Technical Manager – Gut Health and Immunity, Orffa Additives B.V., The Netherlands

Sopaphan Pruekvimolphan,
Technical Manager, Orffa (Thailand) Ltd

EVENT CALENDER

JULY 2026

13-17 JULY – WORLD'S POULTRY CONGRESS
Venue : Metro Toronto Convention Center, Toronto, Canada
Phone : +1-416-585-8120
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AUGUST 2026

4-6 AUGUST – SIAVS
Venue : Anhembi District - São Paulo - Brazil - Av. Olavo Fontoura, 1209
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E-mail : siavs@abpa-br.org
Web : www.siavs.com.br

AUGUST 2026

AUGUST 19-21, VIV Select China 2026
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Contact Person : Ms. Well Hao
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SEPTEMBER 2026

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OCTOBER 2026

9–10 OCTOBER - 7TH WVPA ASIA MEETING 2026
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Contact Person : Dr Barman Bichitra
Phone : +91 95036-50001
Email : dr.barman@gmail.com
Web : www.wvpaasiameeting2026.com

NOVEMBER 2026

25-27 NOVEMBER - Poultry India Expo 2026 | Knowledge Day - 24th Nov. 2026
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Contact Person : Ms. Radhika
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De Heus Animal Nutrition India Breaks Ground for Precision Feeding and Farming Project for Independent Farmers

De Heus Animal Nutrition India marked a major milestone in advancing modern poultry farming with the groundbreaking ceremony of the **Precision Feeding and Farming for Independent Farmers in India** project on 26th April 2026. The ceremony took place at the upcoming farm site, where a state-of-the-art model poultry farm will be developed under the RVO Cluster Program.

The project is a collaborative initiative between De Heus Animal Nutrition India, Manreet Hatchery, VDL Agrotech and Royal Pas Reform. Together, the partners aim to create a modern demonstration farm equipped with advanced technologies and precision farming practices designed to improve efficiency, productivity, and sustainability in poultry production.

Mr. Rutger Oudejans along with management team of De Heus, Mr. Dharminder Singh from Manreet Hatchery, Mr. Surachai Chaicompa from VDL Agrotech, participated in the groundbreaking ceremony. The event brought together key stakeholders, industry experts, poultry farmers and project partners to celebrate the beginning of an initiative focused on empowering independent poultry farmers with innovative and practical farming solutions.

During the ceremony Mr. Gerry Oude Elferink, Poultry Nutrition and Support Director at De Heus, provided an in-depth overview of the project and explained the technical aspects of the upcoming model farm. He emphasized how precision feeding and modern farm technologies can help farmers optimize feed efficiency, improve bird performance, strengthen biosecurity, and enhance overall farm management practices and highlighted the importance of integrating technology and nutrition to build a more sustainable and future-ready poultry sector in India.

The model farm under the project is envisioned as a knowledge and demonstration center where independent farmers can gain practical exposure to modern poultry production systems and best practices. By combining global expertise with local implementation, the initiative aims to contribute significantly to the modernization and long-term growth of India's poultry industry.

Speaking on the occasion, representatives from the partner organizations reiterated their shared vision of supporting farmers through innovation, collaboration, and sustainable development. The project reflects the growing commitment of Indo-Dutch partnerships in strengthening the agricultural and livestock ecosystem in India.

With the groundbreaking ceremony marking the official start of the project, De Heus Animal Nutrition India and its partners look forward to creating a benchmark model for precision poultry farming that can inspire and benefit farmers across the country.

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International Health Care Limited

(PVS Group India) Achieves Successful Participation at VIV Europe 2026, Netherlands

International Health Care Limited (IHC), a flagship company of PVS Group India, proudly announces its successful participation in VIV Europe 2026, one of the world's leading exhibitions for the animal protein production and processing industry (Feed to Food Expo), held in Utrecht, The Netherlands, from June 2 to 4, 2026.

The event provided an excellent international platform for IHC (PVS Group India) to showcase its comprehensive range of innovative solutions for the poultry, veterinary, and aquaculture sectors. The company's exhibition booth attracted significant attention from industry professionals, distributors, manufacturers, and business leaders from Africa, Europe, and many other regions across the globe.

During the exhibition, the IHC team engaged in productive discussions with visitors regarding the company's product portfolio, technical services, third-party manufacturing capabilities, and wholesale distributorship opportunities across European markets. The positive response received from attendees reaffirmed the growing global recognition of the PVS Group brand and its commitment to delivering high-quality animal health and nutrition solutions.

PVS Group India currently exports its products to more than 65 countries worldwide, and its presence across European markets continues to expand steadily. Participation in VIV Europe 2026 further strengthened the company's international business relationships and opened new avenues for strategic partnerships and market expansion.

Representing the company at the prestigious event were:

- **Dr. Seshaiah V. Pamulapati,** Chairman & Managing Director
- **Mr. Arun Pamulapati,** Director
- **Dr. Ajit Jadhav, Head,** Techno-Marketing

As part of the conference and technical interactions during VIV Europe, Mr. Arun Pamulapati successfully presented the company's innovative solutions in Phytobiotics, highlighting their role in sustainable animal production and performance enhancement.

Dr. Ajit Jadhav delivered an insightful presentation on METABO, described as "The Ultimate Alternative to AGP (Antibiotic Growth Promoters)," which received considerable interest and appreciation from industry stakeholders seeking effective and sustainable alternatives in modern animal production systems.

Reflecting on the event, the management expressed satisfaction with the overwhelming response received from visitors and business partners. The exhibition proved to be highly engaging, fruitful, and productive, reinforcing IHC's position as a trusted global partner in animal health, nutrition, and aquaculture solutions.

International Health Care Limited (PVS Group India) extends its sincere gratitude to all visitors, customers, distributors, and industry professionals who visited the company's booth and contributed to the success of VIV Europe 2026.

About International Health Care Limited (PVS Group India)

International Health Care Limited (IHC), part of PVS Group India, is a leading manufacturer and exporter of animal health, poultry, veterinary, aquaculture, and nutritional solutions. With exports spanning over 65 countries, the company remains committed to innovation, quality, and sustainable growth while serving the evolving needs of the global livestock and aquaculture industries.

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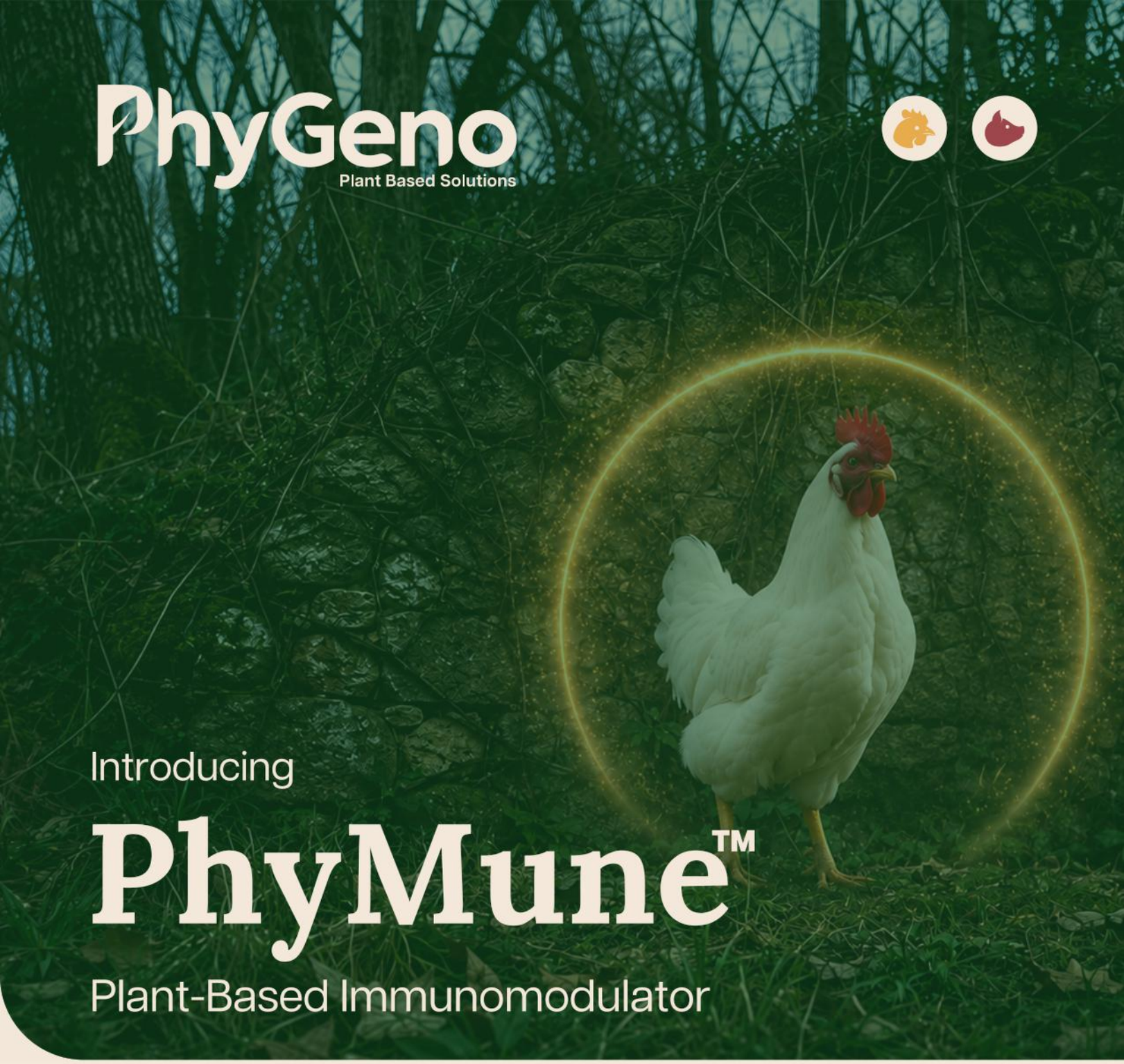

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Venworld Connect Layer Meet:
Focus on Productivity Improvement and Egg Quality Enhancement at Badami, Karnataka

As part of "Venworld Connect" initiative, **Venkateshwara B.V. Biocorp Pvt. Ltd.** successfully conducted an impactful technical meeting on **10th April 2026** at **Badami, Bagalkot, Karnataka.**

The event witnessed strong participation from poultry farmers, integrators, and industry stakeholders, reflecting a growing shift toward scientific nutrition and

performance-oriented management practices. Designed to benefit layer farmers, the meeting focused on delivering practical, field- relevant knowledge backed by scientific advancements.

During the inaugural session, **Mr. Lokesh R. D. (AGM - South)** and **Mr. M. Babu (Zonal Manager)** addressed the gathering, emphasizing the critical role of nutrition in achieving consistent and efficient poultry performance. They reiterated Venworld's commitment to supporting farmers and industry partners through transparent, innovative and science- driven solutions tailored to the evolving needs of the poultry sector.

Enhancing Performance through Precision Nutrition

Dr. Sunil Nadgauda (DGM - Technical, VBVBC) led the technical session, sharing valuable insights into modern poultry nutrition. He emphasized that precision nutrition is essential for achieving optimal performance in today's long -laying birds.

He explained that targeted nutrition directly impacts key performance indicators such as **Feed Efficiency (feed per egg), Egg production and Liveability.** Achieving consistent results depends on efficient nutrient utilization at the bird level and maintaining the right balance of energy and other nutrients in feed formulations. The session also covered strategies to sustain egg production and improve egg quality throughout the laying period. Discussions emphasized the importance of balanced nutrition and gut health, particularly during the later stages of the laying cycle when maintaining productivity becomes more challenging. Special focus was given to achieving uniform egg size and consistent production, which are key indicators of efficient layer management. Dr. Nadgauda highlighted that improved gut health enhances nutrient absorption, directly influencing egg quality parameters such as shell strength, albumen quality, eggshell breakage etc. He also stressed the importance of maintaining an optimal **calcium-to-phosphorus (Ca:P) ratio** across different production phases to support proper eggshell formation and minimize egg breakage.

Additionally, **Dr. Sachin Kadam (Product Executive, VBVBC)** elaborated on key nutritional strategies for layers, reinforcing the role of precise nutrient balance in sustaining production and improving egg quality.

Highlight: EGGXTRA 5% Composite Premix

A key highlight of the meeting was **EGGXTRA 5% Composite Premix,** a targeted nutritional solution developed specifically for commercial layers. The formulation is designed to support sustained egg production, improve egg quality, and ensure a consistent supply of essential nutrients required for optimal flock performance.

The premix is thoughtfully designed to meet the nutritional requirements of layers across all production phases. It supports phase feeding, recognizing that birds have different nutritional needs during pre-lay, peak production, and late laying stages. By addressing these stage-specific requirements, the **Eggxtra 5%** composite premix helps maintain consistent productivity, egg quality and flock health throughout the laying cycle.

Additionally, the premix offers flexibility, allowing farmers to incorporate locally available raw materials, making it both practical and cost- effective. Furthermore, the VBVBC nutrition team showcased their expertise in developing customized, farm-specific feed formulations tailored to individual farmer requirements. This approach enables farmers to optimize feed efficiency, effectively manage input costs, and achieve improved economic returns without compromising performance.

Positive Response and Commitment to Excellence

The sessions received highly positive feedback from participating farmers, who appreciated the practical insights, field-oriented recommendations, and strong technical support provided by the Venworld team. The successful execution of the event was made possible through the dedicated efforts of Venworld's sales and technical teams. Through such initiatives, Venworld continues to strengthen its commitment to advancing poultry nutrition through science, innovation, and farmer-centric solutions.

By emphasizing precision nutrition, gut health, and biosecurity Venworld remains a trusted partner in helping poultry farmers achieve improved performance, enhanced productivity and sustainable growth.

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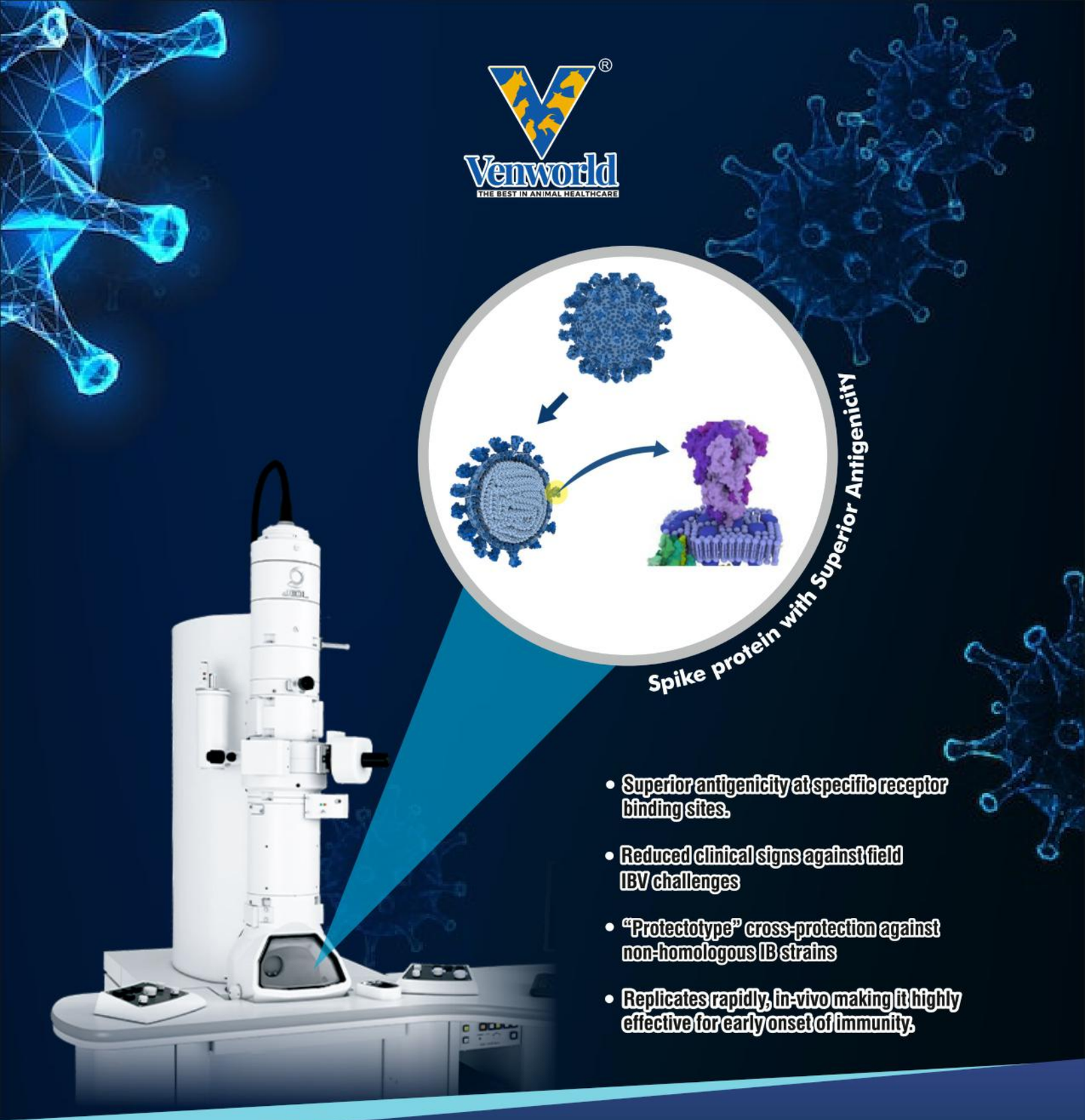

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THE USE OF HIGHER LEVELS OF **PHYTASE** TO REDUCE DIETARY INCLUSION OF INORGANIC PHOSPHATES

Diego Parra
Technical Manager EMEA
AB Vista

"Most poultry and swine diets are primarily composed of plant-based ingredients. In plants, phosphorus (P) is present in different forms such as attached to organic molecules like phospholipids and proteins, but the majority is present as part of the phytate-P, which comprises around 0.18 to 0.25 % in most common cereals. Phytate levels vary in feed ingredients and subsequently feed, and it is therefore critical to analyse these for phytate composition to allow for optimum phytase use to deliver reliable feed cost savings."

Global concern about sustainability has prompted many countries to legislate to re-duce pollution from phosphorus (P) and nitrogen. The use of microbial phytase in animal feeds has the potential to significantly reduce the concentra-tion of P in manure by releasing P from phytate stored in raw materials, thereby reducing the re-quirement for supplementation of inorganic phos-phate to animal diets. The P released from phytate degradation by phytase can be used to meet animal requirements and reduce the inorganic phospho-rous content in manure.

Phosphorus plays a critical role in cellular metab-olism, as a part of the energy (ATP) currency of the cell, in cellular regulatory mechanisms and in bone mineralization. Through its involvement in these metabolic and structural processes, P is essential for animals to attain their optimum genetic potential in growth and feed efficiency as well as skeletal de-velopment. Because of the key role of P in bone de-velopment and mineralization, the requirements of the animal for this mineral are highest in the young growing animal. In diets of non-ruminant animals, such as broilers, the challenge in P nutrition is how to best make available to the animal the P that is present in the diet.

Most poultry and swine diets are primarily com-posed of plant-based ingredients. In plants, P is present in different forms such as attached to or-ganic molecules like phospholipids and proteins, but the majority is present as part of the phytate-P, which comprises around 0.18 to 0.25 % in most common cereals. Phytate levels vary in feed ingre-dients and subsequently feed, and it is therefore critical to analyse these for phytate composition to allow for optimum phytase use to deliver reli-able feed cost savings. Therefore, phytase suppliers should be able to assist in determining phytate-P levels in raw materials and diets. Then, based on the data for nutrient analysis, formulation should be reviewed to ensure enough substrate is available to release the desired nutrient release.

Phytate is poorly digested by monogastric ani-mals which is why phytase was introduced. With-out the use of phytase, typical diets would need to be supplemented with substantial amounts (16-8 kg) of mineral phosphate, monocalcium phosphate or dicalcium phosphate (MCP or DCP), depending on the phase and the specie. Phytate. present in all plant-based feedstuffs, is known to bind with pro-teins and minerals in the diet, reducing digestibili-ty and utilization of important nutrients.

The enzyme phytase hydrolyses phytic acid, re-leasing P and eliminating its metal chelating ca-pability and enhancing nutritional value of raw materials (Image 1). Use of phytase allows refor-mulation, reducing not only the amount of mineral phosphate required but can also help to reduce the inclusion of protein materials due to the impact of phytase (especially at high doses) on amino acid di-gestibility/availability. Several studies have report-ed that phytate increases the excretion of endoge-nous amino acids while use of phytase reduces the ileal flows of endogenous minerals and amino acids in broiler chickens.

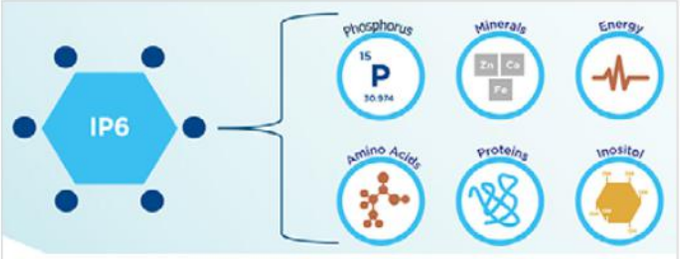

Image 1. *Nutrients that can be released from breakdown of phytate molecules*

Our findings show that phytase should be a man-datory feed additive. The use of phytase as a feed supplement proves effective in mitigating the nega-tive effects of phytate in livestock diets and provides an improvement on feed intake and body weight.

With sufficient dietary phytate, a matrix for P can be applied, which would reduce the levels of in-organic phosphates in the diet. Indeed, with higher doses of more effective phytases, more inorganic P can be replaced by the phytase release. The amount of inorganic P removed from the diet formulation will depend on the dietary phytate content, dosage and type of phytase to be used as well as the nutri-tional matrix values applied.

Graph 2 gives example levels of MCP in a broiler starter diet based on either wheat/soya beanmeal (diet 1) or corn/soya bean meal (diet 2). Typically, in grower and finisher feed, it will be possible to remove all inorganic phosphate from the formula.

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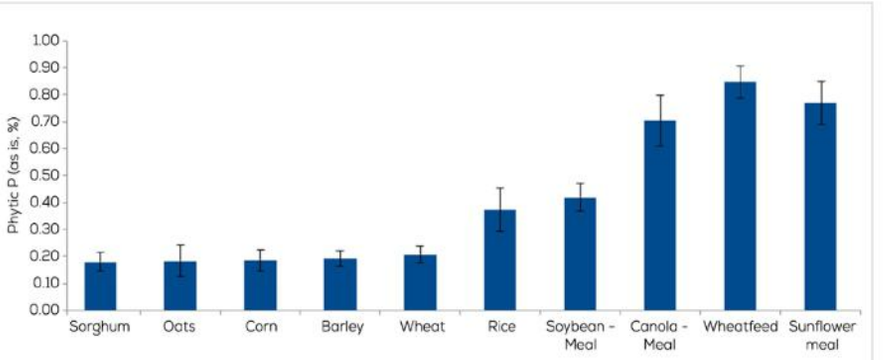
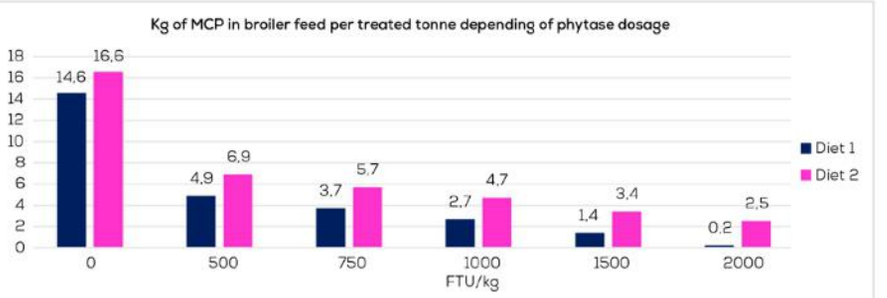
ABVista

Different phytases can have different efficacies, not only when comparing products at standard level but also how increasing dose level impacts on P-release. The latter depends on the efficacy of the phytase in finding the last remaining phytate molecules as well as on the ability of the phytase to release P from partially degraded phytate, such as IP4 and IP3.

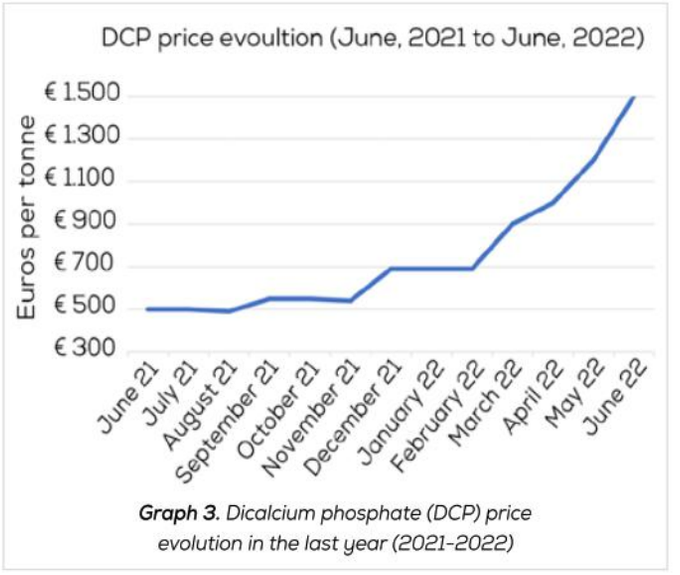
The price of feed phosphates has increased dra-matically during the last year (Graph 3). This has led nutritionists to look at the possibility of using phytase enzymes at higher concentrations (from 1,000 to 2,000 FTU/Kg) than they were normal-ly using (500 to 1,000 FTU/kg) aiming to release more P. Beyond the mineral matrices usually ap-plied (P, calcium and sodium), companies have also started to adopt strategies including additional ma-trix values in the formulate software, such as ener-gy and amino acids. Prices of all raw materials and energy items (electricity, gas, fuel) have increased beyond record levels, due to the current economic and political situation.



Graph 1. Phytate content of the main raw materials used for feed formulation (AB Vista internal data)



Graph 2. Exercise in starter feed which shows the amount of MCP kilograms (Kg) per treated tonne that should be used in different diets depending on the dosage of phytate applied.



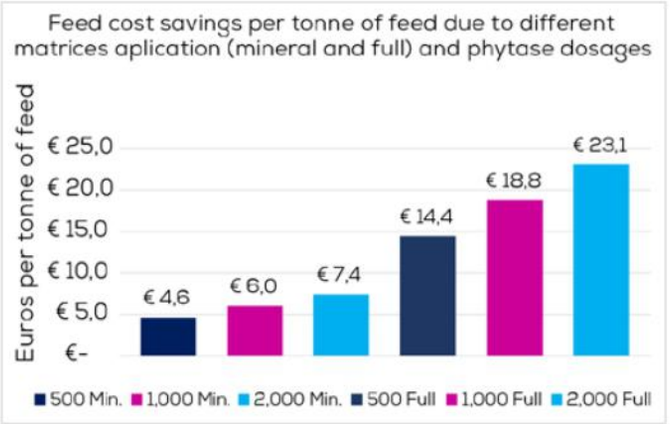
***Graph 3.** Dicalcium phosphate (DCP) price evolution in the last year (2021-2022)*

One of the strategies that AB Vista promotes is to use higher doses of phytase than normally are being used (above 1,000 FTU/Kg) for the purpose of releasing the maximum amount of nutrients from phytate molecules to eliminate its antinutri-tional effect in the diet. In addition, it is being Different phytases can have different efficacies, not only when comparing products at standard level but also how increasing dose level impacts advised to employ a full matrix, based on mineral, energy, and amino acids rather than only the min-eral values (Graph 4). All of these recommenda-tions are supported by validation trials and a good knowledge behind the products, which make the matrices proposed robust and secure to be used safely. The recommendations for these higher lev-els were based upon a holo-analysis data set where confidence limits were included, providing addi-tional safety margins for nutrient releases.

Data using Quantum Blue phytase (AB Vista) supports the use of higher doses of phytase (1,000 to 2,000 FTU/kg). These data suggest that greater phytate degradation occurs, removing the antinutrient properties and also releasing more P.

The animal response to phytases has been shown to be logarithmic. Therefore, as feed prices and thus the value of increased animal productivity increase (as they have done in the past years), it is more economically attractive to dose phytase at a higher level. However, as the dose response curve is not linear, the formulator needs to ensure that the appropriate matrix values are assigned to phytase when the inclusion rate varies.

The higher dosage phytase application with max-imum use of nutrient matrix values is a novel and cost-effective tool in poultry and swine diets that improves environmental and financial sustainabili-ty and may be a cost advantage solution especially given the current prices of ingredients.



Graph 4. Exercise of using different dosage and matrix showing cost savings on final feed.

Min: Mineral Matrix (P, Calcium and Sodium) Full: Maximum Matrix Nutrition (P, Calcium, Sodium, aminoacids and energy)

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Mycotoxins and Pesticide Residues in Poultry Feed:
Sources, Risks and Control Strategies

Dr. Sridhar Selvapandian, Dr. Jayanta Bhattacharyya

Mycotoxin exposure is nearly impossible to avoid because fungal growth and subsequent toxin production can occur at multiple stages of the feed chain: during field crop production, grain storage, transportation, or feed processing. Due to their high thermal stability, these toxins often remain within feed ingredients even after the fungal source has been eliminated. Consequently, they can enter the food chain through animal products such as meat, eggs, and milk (Devegowda *et al.*,2005)

The relationship between fungi and toxins is complex; a single fungal species can produce multiple types of toxins, and conversely, the same mycotoxin can be synthesized by different fungal genera. For instance, aflatoxins are primarily produced by *Aspergillus flavus* and *Aspergillus parasiticus*, while Ochratoxin A can originate from both *Aspergillus* and *Penicillium* species. Based on when contamination typically occurs, these toxins are generally classified into two broad categories: field-based and storage-based, though some may develop during both phases.

Conditions Favoring Mycotoxin Production:

The production of mycotoxins is influenced by both abiotic and biotic factors.

Abiotic Factors:

Fungal growth and mycotoxin production are mainly influenced by **moisture, temperature, pH, and atmospheric conditions.** Water activity (aw) is the most critical factor, with storage fungi such as *Aspergillus* and *Penicillium* producing aflatoxins and ochratoxins, while *Fusarium* and *Alternaria* require higher moisture and mainly contaminate crops in the field. Temperature also plays an important role, and climate change is increasing aflatoxin occurrence in temperate regions. Most mycotoxigenic molds grow best at pH 4.5-6.8, while low oxygen and CO_2 levels above 40% can suppress fungal growth and toxin production.

Water Activity and Temperature Requirements:

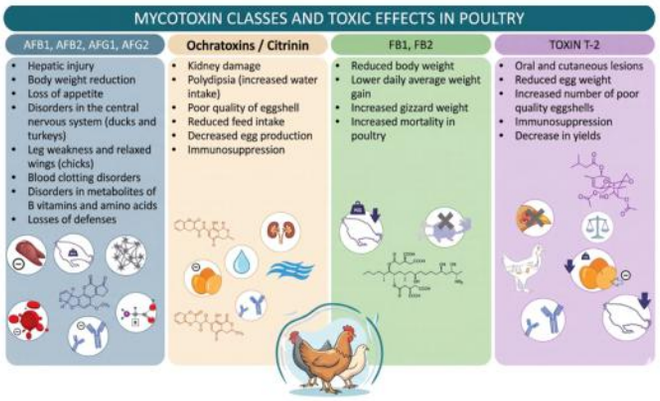
The relationship between water activity (aw) and temperature for the production of major mycotoxins is summarized in the table below:

Mycotoxin	Water Activity Range (aw)	Optimum aw	Temperature Range (°C)	Optimum Temperature (°C)
Aflatoxins	0.82-1.00	0.96-0.99	10-40	25-30
Ochratoxin A	0.80-1.00	0.96-0.99	10-35	20-30
Fusarium	0.92-1.00	0.97-1.00	10-35	18-28

Source: Vet Topics. Management of mycotoxins in animal production (2020) by Antonio Ramos Girona, Sonia Marín Sillué and Pepi et al (2022)

Biotic Factors:

The amount of fungal inoculum present in fields or storage facilities is directly related to toxin concentration. Interactions among fungal species may be synergistic or antagonistic, influencing both mold growth and toxin production. Interestingly, not all fungal strains are toxigenic, which has enabled the use of non-toxigenic strains as biological control agents in agriculture. Crop variety and host susceptibility also significantly influence contamination levels.



Mycotoxin classes and their toxic effects in poultry

Pesticide Residues in Animal Feed:

In addition to mycotoxins, pesticide residues are emerging as another major concern in poultry production systems. India faces a **significant pesticide contamination challenge despite relatively low pesticide** usage (600 g/hectare) compared to developed countries (3000 g/hectare). Among 293 registered pesticides, more than 100 are still used despite international restrictions or bans. Chlorpyrifos and cypermethrin are among the most frequently detected compounds (Keshri *et al.*, 2025).

More than 95% of applied pesticides fail to reach their intended targets, contaminating soil, water, and air. These chemicals subsequently bioaccumulate within the food chain and may appear in livestock products such as meat, milk, and eggs. Chronic exposure can lead to immunosuppression, reproductive failure, endocrine disruption, developmental abnormalities, and cancer (Kumar *et al.*, 2019 and Keshri *et al.*, 2025)Common pesticide residues in animal feed pose various health risks, categorized by class.

Organophosphates (OPs), such as malathion, diazinon, and Chlorpyrifos, are widely used compounds commonly found in cereal grains and processed feeds; they inhibit acetylcholinesterase activity, causing neurotoxicity and metabolic disturbances. **Organochlorines (OCPs),** including DDT, endosulfan, lindane, and aldrin, are persistent and bioaccumulative chemicals contaminating oilcakes and fodder, leading to neurotoxicity and reproductive disorders.

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Less stable **carbamates** (e.g., carbaryl and aldicarb), found in forage crops, are associated with acute toxicity and tremors, while **pyrethroids** (like cypermethrin and deltamethrin), common in stored feed, cause mucosal irritation and nervous disorders.

Pesticide Class	Representative Compounds	Feed Sources	Health Effects	Remarks
Organochlorines	DDT, Endosulfan, Lindane, Aldrin	Oilcakes, fodder	Neurotoxicity, reproductive disorders	Persistent and bioaccumulative
Organophosphates	Malathion, Diazinon, Chlorpyrifos	Cereals, green fodder	Acetylcholinesterase inhibition	Widely used
Carbamates	Carbaryl, Aldicarb	Forage crops	Tremors, acute toxicity	Less stable
Pyrethroids	Cypermethrin, Deltamethrin	Stored feed	Mucosal irritation, tremors	Common in feed storage
Herbicides/Fungicides	Atrazine, Mancozeb	Silage and fodder	Liver and hormonal effects	Rarely monitored

Summary of Common Pesticides in Animal Feed (Kumar *et al.*, 2019 and Keshri *et al.*, 2025):

Prevention and Mitigation Strategies:

There is currently no highly effective treatment for acute mycotoxicosis; therefore, prevention remains the most practical strategy (Pepi *et al* ., 2022 and Attia *et al.*, 2025)

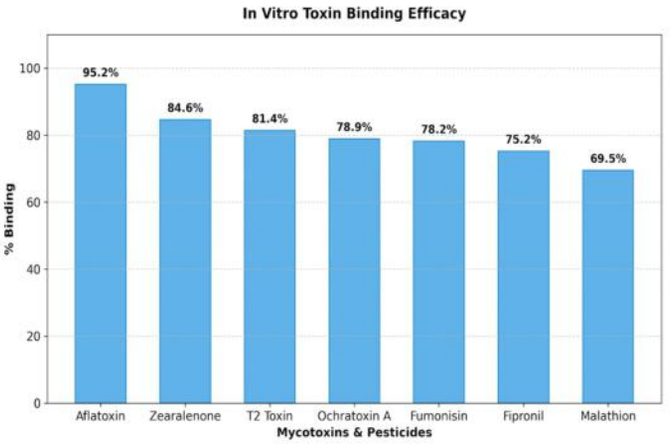
Key strategies for prevention include:

- Implementing rigorous grain drying and storage protocols
- Regulating moisture levels and temperature within storage facilities
- Continuously tracking water activity
- Applying biological control agents and fungicides
- Managing atmospheric conditions during storage
- Conducting routine screenings of raw feed components
- Incorporating dietary additives designed for toxin sequestration

Toxin-binding feed additives play a vital role in modern poultry nutrition by managing mycotoxins, bacterial toxins, pesticide residues, and other chemical contaminants. Advanced ingredients such as activated phyllosilicates and Polyvinylpyrrolidone homopolymer (PVPP) utilize high surface area, adsorption capacity, and charge density to bind toxins through chemisorption and physisorption. The inclusion of organic acids and surfactants further enhances binding efficiency by increasing surface activation and polarity within the gastrointestinal tract.

A multi-functional formulation combining activated phyllosilicates, PVPP, organic acids, surfactants, hepatic stimulants, and biotransforming agents offers comprehensive dual-phase toxin management. This approach integrates Combined Toxin Adsorbent (CTA) and Continuous Activation Mechanism (CAM) technologies to manage toxins before and after absorption. CTA technology provides broad-spectrum adsorption of mycotoxins and chemical pollutants, while CAM technology stabilizes and enhances binding activity. Hepatic stimulants and biotransforming agents further support detoxification by promoting liver function and toxin excretion. This integrated 360-degree strategy supports gut integrity, liver health, feed efficiency, and poultry productivity under multi-toxin exposure.

The efficacy of this formulation was validated through both in vitro and in vivo evaluations. In vitro testing involved 10 mg of product against aflatoxin (200 ppb), ochratoxin A (2 ppm), zearalenone (200 ppb), fumonisin (2 ppm), T2 toxin (2 ppm), malathion (200 ppb), and fipronil (200 ppb). HPLC analysis at pH 3.0 and 6.5, simulating gastrointestinal conditions, confirmed effective binding of all tested mycotoxins and pesticides.



A residue depletion study under high malathion contamination (50 ppm) further demonstrated complete elimination of detectable malathion residues from liver and thigh tissues, confirming the formulation's strong detoxification and residue reduction capabilities.

Conclusion

The presence of pesticide residues and mycotoxins poses substantial risks to the safety of food products, poultry productivity, and bird health. While the ongoing issue of persistent pesticide contamination remains a global challenge for livestock sectors, the synthesis of toxins is heavily dictated by environmental variables, including temperature, moisture levels, and specific storage protocols. Successfully mitigating these risks necessitates a comprehensive strategy that encompasses consistent monitoring, optimized feed storage, the use of biological control methods, and enhanced farming techniques. Furthermore, employing toxin binders that incorporate pesticide-binding capabilities offers a 360-degree protective shield. Robust feed safety initiatives are vital for sustaining poultry performance and ensuring the safety of animal-derived foods for human consumption.

Reference will be available on request.

Dr. Sridhar Selvapandian
Livestock Nutritionist

Dr. Jayanta Bhattacharyya
Director
Techno Commercial

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Northern Region

COMPANY: Sampoorna Feeds
FARMER NAME: Mr. Love Preet Singh

MAY-2026	Top #1
Farm Type	Open House
State	PUNJAB
Chicks Placed	8,836
Mean Age	36.3
Avg Body Wt	2,755
FCR	1.36
cFCR	1.19
Livability%	90.6
Daily Gain	76.0
EPEF	506

Eastern Region

COMPANY: IB Group
FARMER NAME: Mr. Noor Alam

MAY-2026	Top #1
Farm Type	Open House
State	BIHAR
Chicks Placed	1,458
Mean Age	36.0
Avg Body Wt	2,395
FCR	1.35
cFCR	1.26
Livability%	95.3
Daily Gain	66.5
EPEF	468

Central Region

COMPANY: IB Group
FARMER NAME: Mr. Shekh Shahid

MAY-2026	Top #1
Farm Type	Closed House
State	MADHYA PRADESH
Chicks Placed	12,465
Mean Age	40.0
Avg Body Wt	3,304
FCR	1.52
cFCR	1.23
Livability%	94.6
Daily Gain	82.6
EPEF	512

South Region

COMPANY: IB Group
FARMER NAME: Mr. Srinivasulu Reddy

MAY-2026	Top #1
Farm Type	Closed House
State	ANDHRA PRADESH
Chicks Placed	8,255
Mean Age	34.0
Avg Body Wt	2,454
FCR	1.35
cFCR	1.25h
Livability%	94.8
Daily Gain	72.2
EPEF	504

May 2026 -Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age(Days)	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North EC House	14,124	37.0	2,766	1.45	1.28	97.0	74.8	499
North Open House	8,836	36.3	2,755	1.36	1.19	90.6	76.0	506
East EC House	16,981	43.0	3,306	1.58	1.29	96.7	76.9	470
East Open House	1,458	36.0	2,395	1.35	1.26	95.3	66.5	468
Central EC House	12,465	40.0	3,304	1.52	1.23	94.6	82.6	512
Central Open House	2,921	40.0	2,654	1.47	1.33	97.4	66.4	437
South EC House	8,255	34.0	2,454	1.35	1.25	94.8	72.2	504
South Open House	2,678	40.0	2,327	1.44	1.37	95.9	58.2	385

May 2026 -Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	OPEN HOUSE	PUNJAB	8,836	36.3	2,755	1.19	1.17	90.6	76.0	506
Flock 2	OPEN HOUSE	UTTAR PRADESH	5,272	40.0	2,980	1.21	1.17	95.6	74.5	498
Flock 3	OPEN HOUSE	PUNJAB	5,620	34.0	2,485	1.23	1.19	92.2	73.1	503
Flock 4	CLOSED HOUSE	MADHYA PRADESH	12,465	40.0	3,304	1.23	1.20	94.6	82.6	512
Flock 5	OPEN HOUSE	PUNJAB	4,655	34.0	2,476	1.24	1.20	93.0	72.8	501
Flock 6	OPEN HOUSE	UTTAR PRADESH	1,787	42.0	2,793	1.25	1.21	96.1	66.5	446
Flock 7	CLOSED HOUSE	ANDHRA PRADESH	8,255	34.0	2,454	1.25	1.22	94.8	72.2	504
Flock 8	OPEN HOUSE	PUNJAB	9,963	36.1	2,813	1.25	1.22	92.6	77.8	500
Flock 9	CLOSED HOUSE	CHHATTISGARH	10,276	37.0	2,793	1.26	1.22	95.7	75.5	502
Flock 10	CLOSED HOUSE	MADHYA PRADESH	12,360	44.0	3,465	1.26	1.22	95.1	78.8	471

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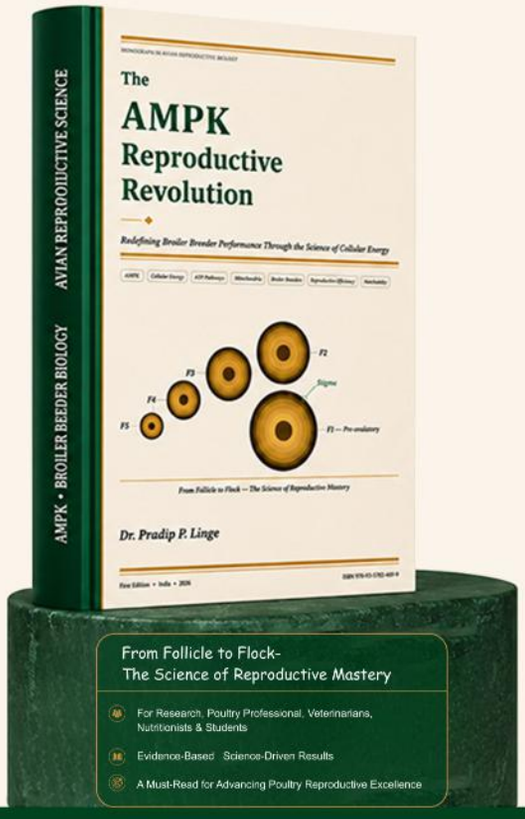
ABOUT THE AUTHOR

Dr. Pradip P. Linge

A dedicated researcher in avian reproductive biology with a passion for translating scientific discoveries into practical solutions for the poultry industry



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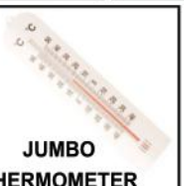
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Heat Stress in Laying Hens: Physiological Impact and the Role of Immunonutrition

Gustavo de Aguiar and Graziela Alves, R&D and DT team at ICC Animal Nutrition

Heat stress has become one of the most important environmental constraints in poultry production, particularly in regions where high temperatures and relative humidity occur for long periods of the year. In commercial systems, heat is not only a welfare concern; it is a biological pressure that changes how birds allocate nutrients, energy, and metabolic resources. Poultry are especially vulnerable because their feather cover, absence of sweat glands, and high metabolic rate limit sensible heat loss. When environmental temperature exceeds the bird's capacity to dissipate body heat, the priority shifts from production to survival. Additionally, in tropical and subtropical markets, this topic deserves even more attention because the thermal challenge often coincides with high humidity, reduced nocturnal cooling, and variable house infrastructure. Under these circumstances, birds may not fully recover during the night, and the next day starts with residual physiological load.

The importance of heat stress is heightened in laying hens because egg formation is a continuous, nutritionally demanding process. A bird must consume enough nutrients to support maintenance, immune function, ovarian activity, shell mineralization, and albumen deposition. Under hot conditions, voluntary feed intake falls as a natural attempt to reduce metabolic heat produced during digestion. Lower intake also reduces the supply of calcium, amino acids, energy, vitamins, and trace minerals required for egg production. Furthermore, the respiratory rate increases, and physiological mechanisms are triggered to maintain internal temperature. Reviews on poultry heat stress describe consistent reductions in productive performance, reproductive efficiency, immune response, and survivability when birds are exposed to acute or chronic thermal challenge (Rostagno and Lara, 2013; Nawab et al., 2018; Vandana et al., 2020; Abdel-Moneim et al., 2021). For egg producers, this shift is critical, as even a short heat wave can reduce laying rate, egg mass, and egg quality, while chronic exposure can compromise persistency, flock uniformity, and profitability.

Why does this happen? The physiological response begins with behavioral and thermoregulatory adjustments. Hens increase panting, spread their wings, reduce activity, increase water intake and seek to enhance heat dissipation through peripheral vasodilation. Panting is essential for evaporative cooling, but it also increases carbon dioxide elimination. This can raise blood pH and trigger respiratory alkalosis, a condition repeatedly associated with reduced bicarbonate availability. In laying hens, bicarbonate is directly involved in eggshell formation, so acid-base imbalance can negatively affect shell mineralization and egg quality. Heat stress also activates neuroendocrine responses, including the hypothalamic-pituitary-adrenal axis, and may alter reproductive hormones. At the cellular level, increased production of reactive oxygen species contributes to oxidative stress, damaging lipids, proteins and membranes. These changes help explain why heat-stressed hens may show lower egg production, reduced egg mass, weaker internal egg quality, and higher susceptibility to health disturbances.

Another important consequence is the impact on gut integrity and immunity. Heat stress can redirect blood flow toward the body surface, reducing intestinal perfusion and impairing epithelial function. When the intestinal barrier is weakened, permeability may increase, and undesirable changes in the microbiota can occur. This creates favorable conditions for opportunistic pathogens and inflammatory responses. Consequently, the immune system then requires more nutrients and energy to maintain defense mechanisms, while the bird is already consuming less feed. This creates a biological conflict: nutrients that would support production are diverted to homeostasis, inflammation control, and tissue repair. Therefore, controlling heat stress is not a secondary management issue; it is central to sustaining output in modern poultry systems. This is why technical monitoring should combine environmental indicators with flock indicators, including behavior, water consumption, feed intake, egg mass, Haugh Unit and signs of intestinal disturbance.

How can nutrition help? Through immunonutrition!

Immunonutrition can be defined as the use of nutrients or functional compounds that interact with immune pathways, intestinal tissues, and microbiota to influence the animal's response to stressors. In poultry, the gut-associated lymphoid tissue is a major component of immune surveillance, continuously exposed to feed antigens, microbiota, and potential pathogens. Heat stress, dysbiosis, and inflammation are closely connected; therefore, nutritional strategies that help preserve intestinal integrity and modulate immune responses can contribute to better stability. This concept considers nutrition not only as nutrient supply, but also as a way to support immune readiness, gut stability, and resilience under challenge. This does not mean indiscriminately "stimulating" the immune system. A more accurate goal is modulation: preparing innate immune mechanisms to respond efficiently, reducing high inflammatory cost, and helping the bird return to homeostasis after challenge.

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In this context, yeast cell wall fractions are among the most studied immunonutritional tools for poultry. Their biological relevance is largely associated with two structural components: beta-glucans and mannan oligosaccharides. Beta-1,3/1,6-glucans can be recognized by innate immune cells, including phagocytes and antigen-presenting cells, located near the intestinal epithelium. This recognition may promote immune alertness and more coordinated cellular responses without requiring tissue invasion by pathogens. MOS, in turn, are related to pathogen agglutination and competitive binding, especially for bacteria that use mannose-sensitive fimbriae, such as some strains of Escherichia coli and Salmonella spp. By reducing pathogen attachment and supporting a more stable microbiota, MOS can indirectly protect intestinal function. During heat stress, when intestinal permeability, oxidative pressure, and inflammatory responses may increase, this type of nutritional support can help the bird maintain a more stable physiological condition and sustain productive performance.

How does it work in practice? Scientific data from ICC Animal Nutrition demonstrate how this nutritional approach can be applied under commercial heat-stress conditions. In a study conducted by Koiyama et al. (2017), commercial white egg-laying hens were exposed to high environmental temperatures, with the thermal challenge exceeding 40°C, and received diets containing different levels of ImmunoWall®, a yeast cell wall-derived product. Under heat stress conditions, hens supplemented with ImmunoWall® maintained a more consistent productive response over time. Cumulative egg production increased from 245 eggs in the control group to 268 eggs in the supplemented group by week 66, indicating better persistency during the challenge period. This response is technically important because, under heat stress, maintaining laying persistency is often more relevant than stimulating short-term egg output. The data suggest that the supplemented birds were better able to sustain production despite the negative effects of high temperature on feed intake, metabolism, and physiological balance.

Table 1. Cumulative egg production over time in laying hens supplemented or not with ImmunoWall® under heat stress

Accumulated egg production (units, by weeks)	Control	ImmunoWall®
22	5	5
34	73	75
45	138	145
50	155	165
66	245	268

The same pattern was observed in key productive parameters. Feed intake increased from 93.5 to 96.2 g/bird/day, while egg production improved from 80.7% to 85.4%. Egg mass also increased, from 48.3 to 51.0 g/hen/day. ImmunoWall® helped sustain the number of eggs produced under thermal stress. Internal egg quality was also positively affected. Albumen height increased from 7.67 to 8.02 mm, and Haugh Unit improved from 86.54 to 88.85. These parameters are important indicators of albumen quality and egg freshness, and they are frequently challenged when birds undergo physiological stress. The maintenance of internal quality reinforces that the response was not limited to production volume, but also involved product quality.

Table 2. Productive performance and egg quality parameters of laying hens supplemented or not with ImmunoWall® under heat stress

Parameter	Control	ImmunoWall®
Feed Intake (g/bird/day)	93,5	96,2
Egg Production (%)	80,7	85,4
Egg Weight (g)	59,9	59,8
Egg Mass (g)	48,3	51,0
Albumen height (mm)	7,67	8,02
Yolk color	4,90	4,83
Haugh Unit	86,54	88,85

From a technical perspective, these results should be interpreted as support for resilience rather than as complete protection against heat stress. ImmunoWall® does not replace environmental control, ventilation, cooling systems, water management, or adequate diet formulation. However, the data indicate that yeast cell wall supplementation can be a useful nutritional tool to help laying hens cope with thermal challenge.

In commercial egg production, this support is particularly relevant because sustaining performance during heat exposure can directly influence flock persistency and economic outcome. The most consistent benefits were observed in feed intake, laying rate, cumulative egg production, egg mass, and internal egg quality, which are precisely the parameters most sensitive to heat stress. By supporting the gut-immune axis through yeast cell wall components such as beta-glucans and MOS, ImmunoWall® may help birds maintain intestinal stability, immune balance, and productive efficiency during periods of high thermal challenge.

In this approach, nutrition becomes a decisive pillar of thermal resilience. As climatic challenges become more frequent, ImmunoWall® stands out as a practical and scientifically supported nutritional solution to help laying hens sustain productivity, health, and egg quality under heat stress.

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PCR-Based Diagnostic Strategies and Molecular Surveillance of *Mycoplasma gallisepticum* and *Mycoplasma synoviae* in the Poultry Industry

INTRODUCTION TO AVIAN MYCOPLASMOSIS

Avian mycoplasmosis continues to be a major infectious challenge affecting commercial poultry farms across the world. The disease is primarily associated with *Mycoplasma gallisepticum* (MG) and *Mycoplasma synoviae* (MS), two highly adapted bacterial pathogens belonging to the class Mollicutes.

The pathogenic process begins when the organisms attach firmly to epithelial surfaces of the respiratory and reproductive tracts using specialized terminal attachment structures. MG is predominantly responsible for Chronic Respiratory Disease (CRD), while MS is strongly associated with infectious synovitis and Eggshell Apex Abnormalities (EAA). Important virulence-associated proteins include GapA, CrmA, VlhA proteins, PlpA, and Hlp3.

EPIDEMIOLOGICAL DYNAMICS AND ECONOMIC BURDEN

Recent epidemiological studies indicate increasing prevalence of MS infections in Indian poultry farms. Significant economic losses arise due to poor feed efficiency, reduced egg production, low hatchability, and carcass condemnation. Transmission occurs through vertical and horizontal routes, with multi-age farming systems contributing significantly to disease persistence.

PRODUCTION AREA	CLINICAL FINDINGS	SUBCLINICAL IMPACT
BROILER PRODUCTION	Respiratory distress, joint swelling, lameness	Poor feed efficiency, uneven flock growth, increased carcass rejection
LAYER / BREEDER OPERATIONS	Reduced egg production and quality, synovitis	Inferior shell quality, decreased hatchability, vertical spread to progeny
MIXED INFECTIONS	Mortality during secondary bacterial or viral infections	Chronic airsacculitis, fibrinous lesions, systemic inflammatory damage

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COMPARATIVE ANALYSIS OF DIAGNOSTIC METHODOLOGIES

Reliable diagnosis requires laboratory confirmation using culture isolation, serological assays, conventional PCR, and real-time PCR techniques.
Real-time PCR is currently preferred because of its speed, high analytical sensitivity, and capability for molecular differentiation.

DIAGNOSTIC METHOD	STRENGTHS	LIMITATIONS
CULTURE ISOLATION	Confirms viable organism recovery	Slow growth, contamination risk, specialized media requirements
SEROLOGICAL TESTS (RSA, ELISA, HI)	Useful for flock -level monitoring	Vaccine interference and cross -reactive false positives
CONVENTIONAL PCR	Rapid species-specific detection	Requires molecular laboratory infrastructure
REAL-TIME PCR	Highly sensitive, rapid, quantitative	Higher instrumentation costs

GENOTYPE-BASED DIFFERENTIATION AND DIVA STRATEGIES

Molecular DIVA (Differentiating Infected from Vaccinated Animals) strategies facilitate differentiation between field isolates and commonly used vaccine strains such as F-strain, ts-11, and 6/85 through PCR-based genotyping and sequence analysis of variable surface protein genes.

FRONTIER DIAGNOSTIC PLATFORMS: LAMP AND CRISPR-CAS12A

Loop-Mediated Isothermal Amplification (LAMP) enables rapid nucleic acid amplification under constant temperature conditions suitable for field diagnostics.
RAA-CRISPR-Cas12a systems provide highly sensitive detection with lateral-flow visualization and portable field applicability.

MOLECULAR DETECTION OF ANTIMICROBIAL RESISTANCE (AMR)

Molecular AMR monitoring targets mutations within the 23S rRNA region and quinolone resistance-determining regions involving gyrA, parC, and parE genes. PCR-based mutation analysis offers rapid alternatives to conventional susceptibility testing.

CONCLUSION AND STRATEGIC RECOMMENDATIONS

Modern control strategies require integrated molecular surveillance, enhanced biosecurity, DIVA-based monitoring, rapid field diagnostics, and antimicrobial stewardship programs. Adoption of a One Health framework is essential for sustainable poultry disease management and food safety protection.

***References available upon request.**

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Dr. A.P. Sachdev

Dr. Ramesh Sikka: Today's interview is a little different from the ones we usually do. We've lost a stalwart of our poultry industry, Dr. A.P. Sachdev, and it's a profound honor — and also quite emotional for me personally — to speak about him today. He wasn't just a colleague to me; he was my mentor, someone who shaped my early years in this industry. So with his family's blessings, I'll be answering these questions on his behalf, sharing what I know of his life and journey.

Q1. Was he originally from Gurgaon?

No, he wasn't. Dr. Sachdev was born in Firozpur, Punjab. As a child, he moved with his family to various locations before finally settling in Delhi in 1964. Later, in 2001, he made Gurgaon his home, where he spent much of his professional life.

Q2. What is the best thing you liked about your journey with him?

As his mentee, what stayed with me most was watching him work for the poultry segment with such full strength and a relentlessly positive attitude. That energy never faded — right from the start of his career to his very last days associated with the industry, his love for this segment remained constant. That consistency is rare, and it's something I've tried to carry forward myself.

Q3. Why did he choose the poultry profession?

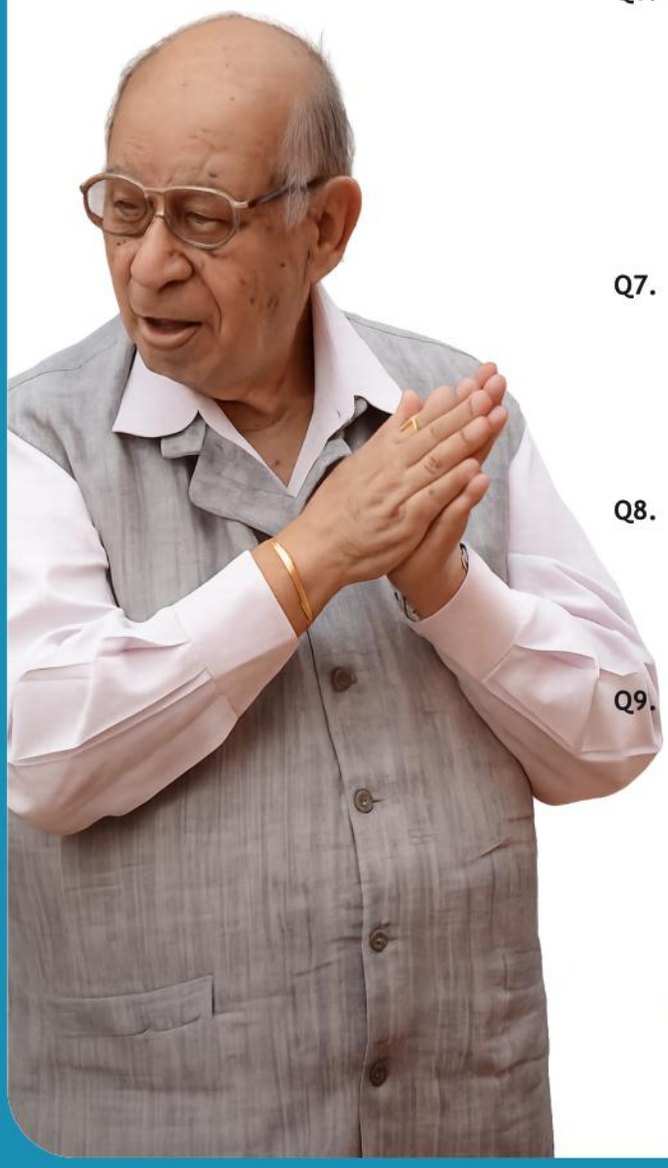
He was a completely self-made man. From the very beginning, he took genuinely to this profession — and with his knowledge, his energy, and his extensive travels across India and Southeast Asia, he just kept wanting to do more. The more he saw, the more he wanted to contribute. That hunger to learn and grow never really left him.

Q4. Compared to other big players in the industry, what made his presence different?

He was always extremely active and eager to learn the latest technology. That curiosity is what set him apart — he contributed to the industry in a big way and held his own at the top, both in terms of knowledge and innovation. He never let himself become outdated, even after decades in the field.

Q5. Please tell us about his family.

He's survived by his son, Amit Sachdev, and a daughter. They were, of course, very close to him, and his loss has been deeply felt within the family.



Q6. What dream did he have for the next generation entering this business?

He was always genuinely thankful for the new entrants coming into the industry. His message to them was always simple and clear — work hard, and do it with a positive attitude. I can say this from personal experience too — as a veteran myself now, I learned so much under his guidance. Many of the lessons he gave me, I still try to pass on to others.

Q7. What was his favourite eatery food?

He genuinely loved food of all kinds, but if you really got him talking, chicken and kababs were his absolute favourites. He had this incredible knowledge of restaurants across different cities in India — honestly, if you were travelling somewhere and needed a good recommendation, he was the man to ask.

Q8. What were his hobbies?

Travelling, and making new contacts and networks for the industry. For him, the two were almost the same thing — every trip was a chance to meet someone new, build a relationship, and strengthen the industry's network in some way.

Q9. Anything you'd like to add?

Just that... his passing left me deeply shocked. On behalf of myself and his many well-wishers in the industry, I'd like to offer my family's *shradhanjali* to him on his birthday, the 27th of June. May his soul rest in eternal peace. He will always remain a guiding light for those of us who had the privilege of knowing and learning from him.

Host by:
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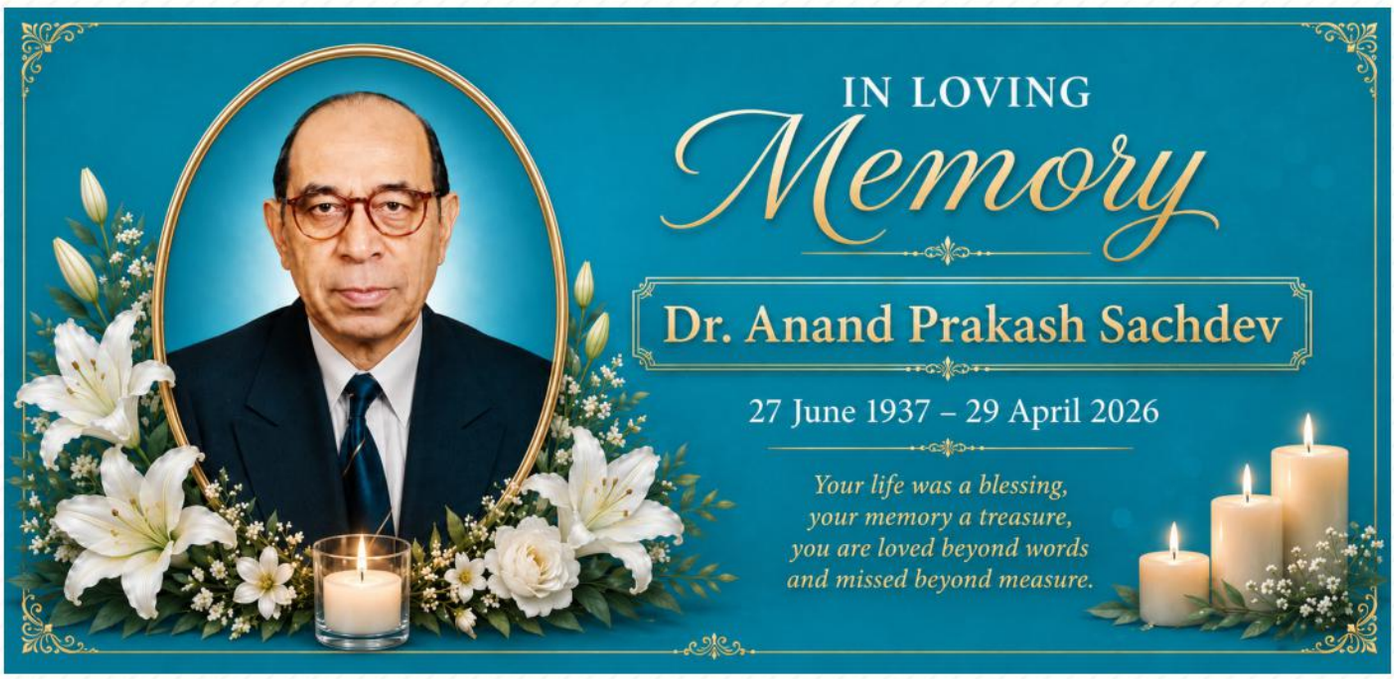

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Alltech brings together progressive farmers & industry leaders for the Agri-Nutrition Insights 2026 program

Alltech successfully hosted the Agri-Nutrition Insights 2026 series across four key locations — Dhaka (Bangladesh), Ludhiana, Ahmedabad and Ajmer — during the week commencing May 20, bringing together more than 300 progressive farmers, industry experts and stakeholders. The program served as a vibrant platform for knowledge exchange, industry discussions and collaborative learning, featuring technical sessions, interactive discussions and engaging Q&A sessions focused on practical solutions for the dairy and poultry sectors.

The event agenda covered a wide range of important industry topics, with expert speakers sharing practical insights and market perspectives relevant to today's livestock industry.

- Dr. Aman Sayed, Alltech's regional director for South Asia and managing director for India presented key perspectives on the Alltech Agri-Food Outlook along with important industry updates.
- Nick Adams, director of Alltech's Technology Group delivered an in-depth session on mycotoxin risks and mitigation strategies.
- Dr. Lokesh Gupta, technical director for poultry at Alltech South Asia, discussed the importance of trace minerals and their role in improving animal performance.
- Dr. Pradeep Mahajan, renowned dairy consultant shared on protein & mineral management, practical insights on optimizing cost effectiveness in the dairy sector.
- Dr. KS Prajapati, renowned poultry consultant highlighted respiratory health challenges and effective control measures.

The series attracted strong participation from dairy and poultry producers, feed manufacturers, consultants and cooperatives, creating opportunities for networking and meaningful dialogue across the value chain. Attendees actively interacted with speakers during the Q&A sessions, making the discussions highly engaging and relevant to field-level challenges and opportunities.

The Agri-Nutrition Insights 2026 series was widely recognized as a valuable platform for learning, collaboration and strengthening industry relationships, leaving a strong and positive impact across all regions. The events reflected Alltech's continued commitment to supporting the livestock industry through science-based solutions, technical expertise and meaningful customer engagement.

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Announces Strategic Acquisition of Cure Medicines India Pvt. Ltd.

Optima Life Sciences Pvt. Ltd. is pleased to announce the strategic acquisition of **Cure Medicines India Pvt. Ltd.**, marking a significant milestone in its journey towards building a future-ready, diversified healthcare and life sciences platform.

Founded in 2003 and based in Pune, Cure Medicines India Pvt. Ltd. has built a strong reputation as a trusted pharmaceutical manufacturer, with capabilities spanning a wide range of allopathic formulations across key therapeutic segments. The company brings proven expertise in manufacturing, formulation development, and quality systems—further strengthening Optima's expanding ecosystem.

This acquisition aligns with Optima's long-term vision of expanding its footprint across human and animal health, strengthening backward integration, and accelerating innovation-led growth.

Vinay Kulkarni, Executive Chairman, Optima Life Sciences, shared: *"At Optima, we have always believed in building for the long term—with a clear focus on science, quality, and impact. The acquisition of Cure Medicines is a natural extension of that vision. What stands out to me is the strong foundation that the Cure team has created over the years. We see immense potential in combining their capabilities with Optima's strategic direction to build a scaled, future-ready healthcare platform. This is not just about growth—it is about creating enduring value."*

Commenting on the acquisition, **Ulhas Puranik**, Director of Cure Medicine, said: *"Over the years, we have built Cure Medicines with a strong commitment to quality, reliability, and customer trust. We are proud of what we have created. Joining hands with Optima Life Sciences gives this legacy a powerful platform for scale and future growth. I am confident that under Optima's leadership, the company will reach new heights while staying true to its core values."*

Strategic Rationale:

- **Portfolio Expansion:** Strengthening presence in pharmaceutical formulations
- **Manufacturing Capability:** Access to robust infrastructure and technical know-how
- **Market Synergy:** Unlocking new customer segments and cross-market opportunities
- **Future Growth:** Building an integrated platform across health, nutrition, and therapeutics

OPTIMA

Chapter 2

Every growth story reaches a moment
when the next chapter demands
a bigger vision.

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"Our customers operate in an environment that is constantly evolving, shaped by changing healthcare needs, scientific advancements, and rising expectations around quality and innovation. At Optima, our commitment is to stay ahead of these shifts and continue delivering solutions that create meaningful value. The acquisition of Cure Medicines strengthens our ability to serve customers with a broader portfolio, enhanced capabilities, and greater agility, ensuring we remain a relevant and trusted partner for the future," said **Dr. C.V. Chandrasekaran, Sr. Vice President - Sales, Optima Life Sciences.**

Dr. Arindam Chatterjee, Vice President - Strategy, Marketing & Technology, Optima Life Sciences, added: *"This acquisition is not just an expansion—it is a strategic step towards building a more integrated, innovation-driven organization. Cure Medicines brings strong manufacturing capabilities, formulation depth, and a diversified product portfolio that perfectly complements Optima's growth ambitions. Our focus will now be on unlocking synergies across R&D, manufacturing, and market access to create differentiated value for our customers."*

Vikrant Mahajan, GM - Finance & Accounts, Optima Life Sciences, added: *"This transaction has been underpinned by a rigorous and multi-layered due diligence process spanning financials, compliance, manufacturing systems, and operational sustainability. Our focus was not just on validating current performance, but on assessing the robustness of systems and the scalability of the business. The strength and transparency we observed in Cure Medicines gives us high confidence in the long-term value creation potential of this acquisition."*

Vivek Sadhale, Co-Founder, Legalogic Consulting, who advised Optima on the transaction, said: *"This acquisition was executed through a structured and meticulous legal process, with a strong emphasis on regulatory compliance, risk mitigation, and transaction clarity. It was a pleasure partnering with the Optima team, whose strategic intent and execution discipline enabled a smooth and well-governed transaction. We believe this deal sets a strong foundation for scalable and compliant growth going forward."*

The integration will focus on scaling operations, enhancing product pipelines, and driving cross-functional synergies to deliver greater value to customers, partners, and stakeholders. This marks the beginning of a new chapter—where science, scale, and strategy converge to shape the future of healthcare.

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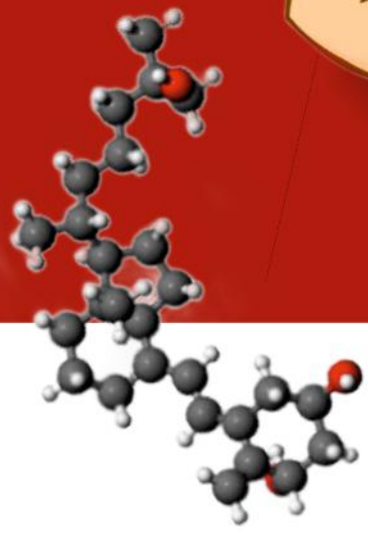

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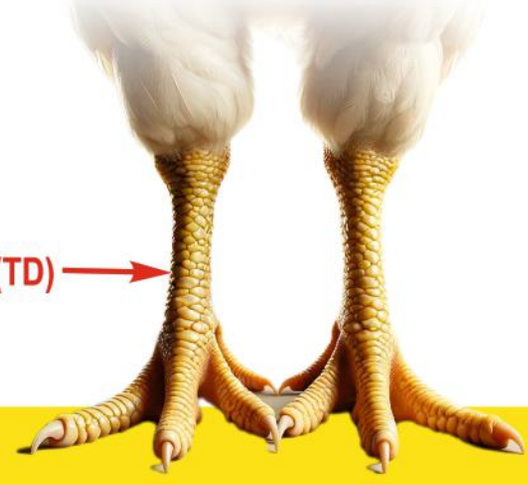

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Hairline Cracks In Hatching Eggs

Aviagen India

Hatching eggs with hairline cracks pose a hidden threat, reducing the embryo's ability to hatch and increasing the risk for contamination. A normal hatching egg leaves the hen without cracks. From the moment of lay, the egg is exposed to manual or automated egg collection, sorting, packing, and movement on the breeder farm, followed by transportation to the hatchery, and, in some cases, transfer from plastic or pulp trays to setter trays.

During this journey, rough egg handling may cause hairline cracks in the egg shell and possibly disrupt the underlying shell membranes. These hairline cracks may not be immediately visible to the naked eye and do not leave a trace of the exact moment of impact. Because of this, hairline cracks are often missed when doing quality checks during egg collection at the breeder farm. On arrival at the hatchery, hairline cracks that have occurred on the breeder farm are visible, but not consistently recognized, removed, and discarded. Egg quality analysis, conducted by Aviagen incubation specialists at customer hatcheries, revealed that the percentage of hairline cracks can be as high as approximately 7% for certain flocks.

This article focuses only on hairline cracks. It does not address body-checked eggs that were cracked and repaired inside the hen's reproductive tract. These eggs typically have a crack covered by a layer of calcium, making the crack appear as a ridge or band (Figure 1).

How to find Hairline Cracks?

Hairline cracks only become apparent after a few days when moisture from the air has had time to penetrate the crack and produce a faint gray line at the shell surface. When searching for hairline cracks in an egg pack, pick up and inspect each egg with a flashlight, as the crack may be located at the bottom or on the other side. A flashlight makes it easier to detect the moisture that has entered the crack becomes illuminated **(Figure 1)**.

FIGURE 1: *Examples ofa body-checked egg (left) and illuminated hairline cracks (right).*

How to Locate the Point or Location of Impact?

Hairline cracks are often caused by collisions with other eggs or hard materials in the egg collection system. Whether an eggshell crack depends on the speed of the impact and the quality of the eggshell. High impact speed (G-force) and weak shells increase the likelihood of cracks.

The location of impact can be found in several ways. A quick check can be done by using your eyes and ears to detect the sight and sound of colliding eggs before or during egg collection, and by looking for sharp edges or rough transitions. Start from the laying nest and work down the egg collection system. Another method is to collect eggs after each transition point, store them for two days, and examine them for hairline cracks using a flashlight.

However, modern technology allows us to use a more sophisticated approach. An artificial egg with G-force sensors inside can be used to track the egg's journey from laying until arrival at the hatchery. Each transition point should be checked several times, and real-time data provides information on the range of impact and the corresponding time. There are several artificial eggs on the market, for example: Wireless Egg Node, Cracklessegg, Mach-sens Egg Tracker and Gregg Smart Egg (Figure 2).

FIGURE 2: *An artificial egg with a G-force sensor inside (crack/essegg.com).*

Hairline Crack Prevention

Gentle egg handling

Minimize the use of harsh or overly automated equipment, and train staff and drivers on the importance of delicate egg handling.

Transport safeguards

Use shock-absorbent materials and avoid jarring motions during egg transportation from the farm to the hatchery.

Routine hatchery inspection

Candle samples from every batch of eggs immediately upon arrival at the hatchery, and track the hairline crack trends over time.

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Routine breeder management evaluation

Any condition that makes the egg shell weaker will increase the likelihood of cracks. This could be related to heat stress, nutrition, water quality, disease, or bird age.

Routine egg journey inspection at the breeder farm

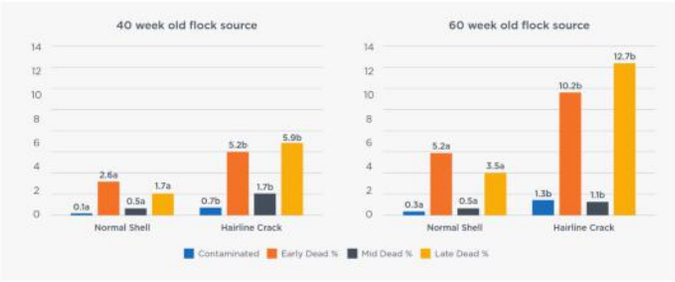
Check the basics. Every nest must have a nest mat in good condition and, in the case of automation, a nest mat that is positioned correctly so that the eggs roll gently onto the belt without colliding with the nest walls or conveyor belt structures. The collection frequency should be a minimum of 4 times per day to prevent egg-to-egg collisions on the conveyor belt.

Consequences of Hairline Cracks

Contamination Risk

A cracked egg leaves the door open for bacteria to penetrate and possibly cause contamination. This risk increases when a hairline crack is caused while the egg is still in the cooling-down phase, just after lay, combined with a (slightly) dirty eggshell. Egg contents shrink when cooling down from the hen's body temperature to storage temperature. This shrinking process facilitates bacterial penetration through cracks, as the slight under pressure pulls anything outside the egg into the egg. Usually, the shell and inner membrane act as a natural barrier for microbes or bacteria; however, when the shell and membrane are cracked and disrupted, the embryo is at risk. Eggshell cleanliness, affected by breeder house management, plays an important role in determining whether an egg with a hairline crack has to face a bacterial challenge. Research shows that losses due to contamination increase by a factor 5 to 6 (Figure 3).

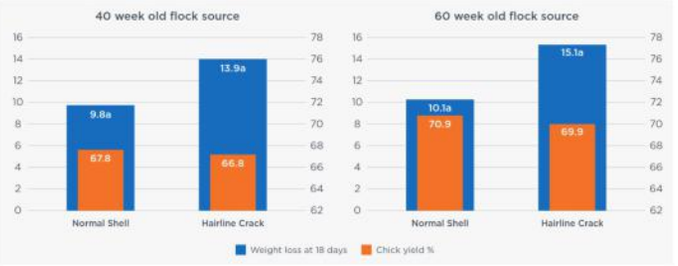
FIGURE 3: *Hatch debris analysis (Aviagen trials 2025 and 2026). Letters show statistical di erences between normal eggshells compared to shells with a hairline crack.*



Reduced Hatchability

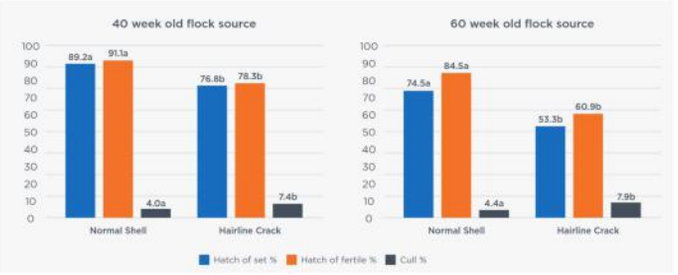
Eggs with hairline cracks have reduced hatchability, as they are more vulnerable to contamination and dehydration. Reduction in embryo viability doubles or triples across all stages of incubation compared to a normal shell **(Figure 3).** A cracked egg will lose more weight due to increased moisture loss during incubation. Egg weight loss is, therefore, higher, and this will consequently lead to a lower chick yield **(Figure 4).** Chick yield is, however, less affected, as late dead embryos and dehydrated cull chicks are not included in the chick yield parameter. Overall, chicks hatched from cracked eggs have a lower quality, if they manage to hatch, resulting in more culled chicks **(Figure 5).** However, results may differ if using in-ovo vaccination.

FIGURE 4: *Weight loss and chick yield % (Aviagen trials 2025 and 2026). Letters show statistical differences for weight loss of normal eggshells compared to shells with a hairline crack. No significant difference was seen for chick yield, as all trays were close to or within target, and incubation time was variable.*



The Aviagen research presented below, with an average specifi c gravity above 1,080 for both fl ock ages (Figure 5), illustrates the drop in hatchability when comparing clean, normal eggs to those with hairline cracks. Experiments conducted by other researchers, for example, Barnett et al. (2004), show signifi cantly larger drops in hatchability, which may be related to the origin of the eggs and eggshell cleanliness.

FIGURE 5: *Hatch of set, hatch of fertile, and cull %. Hatch of set and hatch of fertile have culls removed. (Aviagen trials 2025 and 2026). Letters show statistical di erences for weight loss between normal eggshells compared to shells with a hairline crack.*



As a commercial example, an average hatchery that sets 1 million eggs per week, with 4% hairline cracks in their egg pack, loses 0.5% hatchability. Assuming that hairline cracked eggs under hatch at a rate of 12.4%, this means 5,000 chicks are lost weekly. On a yearly basis, this translates to a loss of 260,000 chicks.

Conclusion

Eggs with hairline cracks are inferior compared to eggs without hairline cracks in terms of hatchability and chick quality, and cause an economic loss. Hairline cracks are detectable and mostly visible after a few days of storage at either the breeder farm or hatchery. There are multiple ways to find the cause, and therefore, eggs with hairline cracks are an unnecessary loss that should be avoided.

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KURACO™ Dry:
Better Gut Health for Better Broiler Performance

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Dr. Bharat Sadarao, Dr. Venket Shelke,
Dr. Partha Das, and Dr. R. Chanthirasekaran

ABSTRACT

A commercial field trial was conducted to evaluate the effects of KURACO™ Dry supplementation on the growth performance, intestinal health, and economic efficiency of Vencobb 430Y broiler chickens. A total of 17,932 birds were selected from two sheds having same age and divided into two groups: a control group (8,958 birds) receiving regular breed standard feeding and a treatment group (8,974 birds) receiving regular breed standard feeding supplemented with KURACO™ Dry during 7 days trial period (beginning from 27th to 33rd day of the birds' age) at a dosage of 5g per 100 birds in the water. Key performance indicators, including body weight (BW), feed intake, feed conversion ratio (FCR), corrected FCR (CFCR), livability, and European Efficiency Factor (EEF), were assessed. However, the outcomes of the trial were calculated only considering the average performance of the seven-day trial. The treatment group showed a positive improvement in body weight (1590g) compared to the control group (1510g), with a lower FCR (1.53 vs. 1.62), CFCR (1.64 vs. 1.74), and EEF (313 vs. 280), indicating better feed efficiency. The mortality rate was lower in the treatment group (1.07%) compared to the control (1.54%). Furthermore, a significant reduction in dysbacteriosis was observed in the treatment group (1.00 vs 1.67), along with improved intestinal health, reflected by lower TMLS values. In economic terms, the cost of production per live bird was reduced by 30 paise (INR 0.30), resulting in a return on investment (ROI) of 1.55:1 for the treatment group. These positive results suggest that KURACO™ Dry supplementation enhances growth performance, intestinal health, and economic efficiency in broiler production, indicating its potential to enhance overall poultry productivity.

INTRODUCTION

Commercial chicken production is vital for its nutritional and socio-economic contributions, providing high-quality protein and income for poultry producers. A critical factor for maintaining optimal performance in poultry is gut health; disturbances here can lead to production losses through impaired growth, reduced feeding efficiency, and higher infection risks. Common gut disorders such as necrotic enteritis and dysbiosis are significant challenges for poultry health and overall farm productivity. In response to social pressures for a total ban on in-feed antibiotics, particularly due to concerns over antibiotic resistance and residues, there has been a rapid shift towards using antibiotic alternatives in poultry production.

As a result, natural alternatives like probiotics, prebiotics, and phytochemicals have gained recognition for maintaining gut health. Prebiotics stimulate the growth of beneficial gut bacteria such as bifidobacteria and lactobacilli, with fructo-oligosaccharides (FOS) specifically enhancing populations of bifidobacteria and promoting better gut function. Probiotics, defined as live microorganisms that confer health benefits to the host, improve gut flora, assist digestion, boost immunity, and increase infection resistance. Phytochemicals derived from plants offer antimicrobial, anti-inflammatory, and antioxidant benefits, which can alleviate gut inflammation and improve intestinal integrity. Collectively, these alternatives represent a comprehensive strategy to uphold gut health in poultry, reduce antibiotic dependence, and minimize antibiotic resistance risks.

This study's objective is to evaluate the effects of KURACO™ Dry, a Kemin Industries-developed product that incorporates a unique blend of prebiotics (FOS), probiotics (Bacillus subtilis PB6), and phytochemicals (Boswellia serrata), on the performance and gut health of broiler chickens. KURACO™ Dry aims to enhance gut health and control dysbacteriosis by incorporating active probiotics, which help maintain beneficial microflora through competitive exclusion of pathogenic bacteria and using functional polysaccharides to create an environment conducive to beneficial microbes, along with gut-centric phytogenic compounds that support the management of inflammatory conditions.

OBJECTIVES

The primary objective of the present study is to evaluate and validate the efficacy of KURACO™ Dry under field conditions, incorporating various management practices, and assessing its impact on performance metrics and improvements in gut health (specifically dysbacteriosis status). Additionally, the study aims to analyze the economic returns associated with the use of KURACO™ Dry in commercial broiler production.

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MATERIALS AND METHODS

A field trial was conducted in the Southern part of India in a commercial broiler farm using Vencobb 430Y broiler chickens, housed in two commercial broiler sheds (control group and treatment group). At the start of trial day, the control group consisted of 8,958 birds, while the treatment group contained 8,974 birds. The experimental trial design, classification in groups, trial period, and dosage regimen are mentioned in groups in Table 1. The farm was chosen in response to a request from the customer to demonstrate the financial advantages of commercially available gut health symbiotic solutions. The experiment lasted 7 days in total, beginning on the 27th and ending on the 33rd day of the birds' age.

Table 1. Experimental Groups and Dosage Regimen.

Groups	Description	Treatment Period	Number of Days	No. of Chicks
Control Group	Breed Standard	27-33 days	7 Days	8,958
Treatment Group	Breed Standard + KURACO™ DRY (5gm per 100 birds in drinking water)	27-33 Days	7 Days	8,974

Birds were offered standard commercial broiler finisher pellet feed and clean drinking water ad libitum. To preserve the trial's flow, zootechnical measures such as body weight gain (BWG) and feed conversion ratio (FCR) were calculated cumulatively from the first day of the bird's placement age. However, the outcomes of the trial were calculated only considering the average performance of the seven-day trial. During the seven-day study, the actual mortality rate was considered. The corrected feed conversion ratio (CFCR), European efficiency factor (EEF), economics in terms of ROI, and relative cost advantage/disadvantage over control were estimated for the treatment group based on the average trial results of seven days.

At the end of 7 days of trial, intestinal lesion scoring, dysbacteriosis scoring, droppings consistency, and feed passage were assessed in both groups to monitor improvements in bacterial enteritis (BE) and dysbacteriosis scores. Three birds each from the control and treatment groups were randomly chosen, and their intestines were removed after cervical dislocation, following ethical practices, and measured for gut lesion scoring. The gastrointestinal tract (GIT) of each bird was thoroughly examined for lesions indicative of coccidiosis, as well as for signs of bacterial enteritis/dysbacteriosis. Coccidiosis lesions were scored and recorded based on severity following the method of Johnson and Reid (1970), while dysbacteriosis lesions were scored according to the protocol established by Teirlynck et. al. (2011). Feces consistency was recorded based on observations of feces from both groups.

RESULTS

Broiler performance:

The analysis of data about body weight (BW), feed intake, feed conversion ratio (FCR), corrected feed conversion ratio (CFCR), livability percentage or mortality, and European efficiency factors (EEF), which were collected from control and treatment groups, is presented in table figures (Table 2 and Figure 1). For the total trial period of 7 days, the treatment group KURACO™ Dry had a higher average body weight of 80g and lower feed intake of 6g when compared to the control group. Similarly, the treatment group recorded a mortality rate of 1.07% over 1.54% of the control group, showing better livability in the treatment group. It shows a 0.47% cumulative mortality reduction in the KURACO™ Dry group compared to the control group. The total mortality of birds in the control and treatment groups was 138 and 96, respectively. The positive effect on body weight and mortality in the KURACO™ Dry treatment group resulted in an 8.5-point feed conversion ratio (FCR) improvement and 10.5 points corrected feed conversion ratio (CFCR) improvement over the control group. The European efficiency factor (EEF) was observed to be 32 points higher in the KURACO™ Dry treated group compared to the control group. Specifically, the treatment group demonstrated a numerical increase in all performance measures, suggesting a beneficial impact of KURACO™ Dry supplementation on broiler growth and health.

Table 2: Effects of KURACO™ Dry on Broiler Growth Performance

Parameters	Control	Treatment
Body Weight (BW)	1.51	1.59
Feed Intake	2.445	2.439
Feed Conversion Ratio (FCR)	1.62	1.53
Corrected Feed Conversion Ratio (CFCR)	1.74	1.64
Mortality (%)	1.54	1.07
European Efficiency Factor (EEF)	280	313

Evaluation of fecal characteristics:

The excreta consistency was monitored randomly throughout the trial by visual observation. Images of the poultry droppings of respective groups are shown in Figure 2. As per observation, the droppings from the control group show abnormalities in terms of loose droppings, semi-solid droppings, along with undigested feed particles, accompanied by orange-colored mucoid matter, indicative of poor digestive health.

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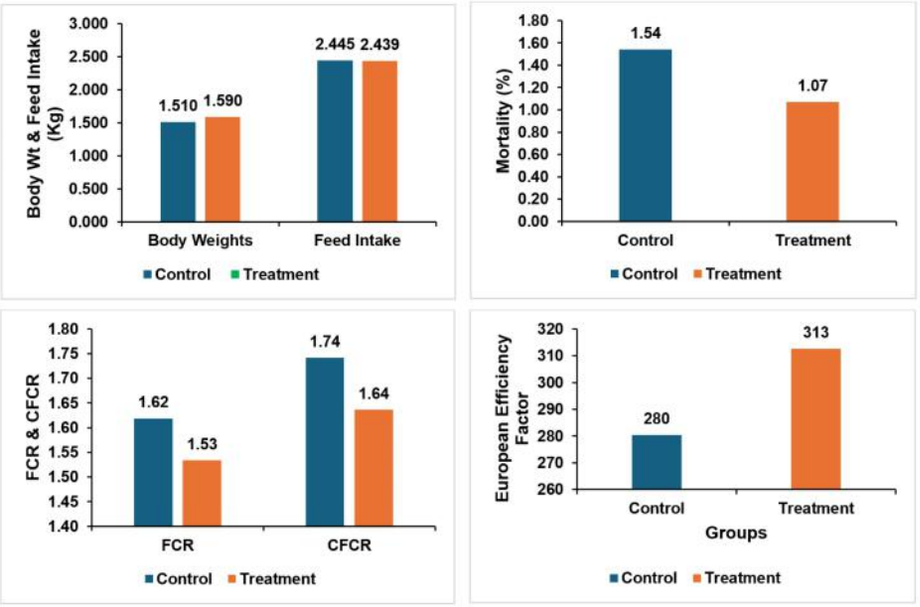


Figure 1: Effect of control and treatment groups on broiler performance parameters.

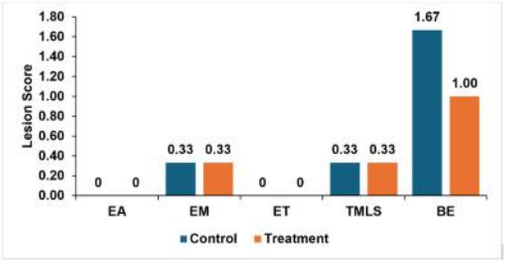
In respect to the control group, the treatment group had better excreta consistency, characterized by normal, well-formed droppings, reflecting enhanced gut health, which shows a better nutrient utilization by the birds.

Figure 2: Evaluation of fecal characteristics in the control and treatment groups32

Intestinal lesion and dysbacteriosis score:

The intestinal lesion and dysbacteriosis scores for the birds in the control and treatment groups were measured, and the results are shown in Figure 3. Conspicuously, the TMLS (total mucosal lesion score) values were similar (TMLS - 0.33) in both groups, <1.00, showing better management in the coccidiosis program. Similarly, the improvement in dysbacteriosis or bacterial enteritis scores was also assessed for both control and treatment groups during the trial. A dysbacteriosis score of 1.67 was observed in the control group when compared to the treatment group score (1.00).

Figure 3: Intestinal and dysbacteriosis lesion scores in trial groups



In Figure 4, it is shown that the intestinal wall is more inflamed and contains orange mucoid content compared to the treatment group. This improvement in the intestinal health score may be attributed to treatment with the KURACO™ Dry group for a week, which helped improve the overall intestinal lesion score and maintain gut integrity.

Figure 4: Condition of the intestinal wall and content in trial groups32

Cost of production (CoP) and return on investment (ROI):

In economic terms, the cost of production expressed per live broiler bird produced was lower by 30 paise (INR 0.30) in the treatment group than in the control group, which demonstrated a return on investment (RoI) of 1.55:1 in favor of the treatment group (Table 3).

Table 3: Economic calculations and return on investment (ROI) details

Parameters	Control	Treatment
Chicks Placed	8958	8974
Mortality (%)	1.54	1.07
Total Birds Remaining (N)	8820	8878
Average Body Weight (kg)	1.51	1.59
Average Feed Consumed (kg)	2445	2439
Total Feed Consumed for 7 days (kg)	8125	8086
FCR	1.62	1.53
CFCR	1.74	1.64
Chick Cost (INR)	25	25
Average Feed cost per kg (INR)	36	36
Total Water Consumption (2.5x of feed) (L)	20312	20214
Cost of KURACO™ DRY treatment (INR)	-	1727
KURACO™ DRY treatment cost per bird (INR)	0	0.19
Total Production Cost (INR)	516447	515431
Production Cost per broiler bird (INR)	58.55	58.25
Production Cost Saving per broiler bird (INR)	-	0.3
Net Profit from treatment group (INR)	-	2685
ROI	-	1.55:1

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DISCUSSION

This study demonstrates that administering KURACO™ Dry via drinking water significantly improved broiler chicken performance, particularly in terms of livability. The positive effects of KURACO™ Dry are linked to several factors, including increased beneficial gut bacteria, reduced harmful bacteria, and better gut health, leading to improved nutrient absorption. Birds in the KURACO™ Dry group exhibited improved droppings, with fewer undigested particles and reduced inflammation.

Previous research indicates that the use of probiotics like Bacillus subtilis PB6 can enhance poultry health and performance by lowering harmful bacteria such as Clostridium perfringens and E. coli in the gut. In line with previous studies, Melegy et. al. (2011) and Jayaraman et al. (2017) demonstrated that dietary supplementation of Bacillus subtilis PB6 resulted in a significantly ($P<0.05$) improved body weight gain, feeding efficiency, and lower mortality. Such improvement in poultry performance, along with reduced intestinal lesions by adding Bacillus subtilis PB6 (ATCC-PTA 6737) to the diet at the level of 5 × 1011 cfu/kg, resulted from a significant increase in the villi height (VH) and the ratio between the crypt depth (CD) and VH. The VH/CD ratio serves as a reliable indicator of optimal gut morphology, with a higher ratio typically associated with improved nutrient absorption and intestinal function. Probiotics show beneficial effects on chicken performance under both healthy and infected conditions due to their ability to secrete helpful compounds like digestive enzymes, antibacterial substances, and/or other growth-promoting factors, such as short-chain fatty acids.

FOS (fructooligosaccharides) is a prebiotics that promote the growth of beneficial gut bacteria like Lactobacillus and Bifidobacteria in the large intestine. This enhancement leads to improved gut microbial balance and suppression of harmful pathogens, positively affecting overall health. Studies, including those by Li et. al. (2008), demonstrate that FOS combined with Bacillus subtilis significantly improves growth performance and feed conversion in broilers by increasing beneficial bacteria and reducing harmful pathogens. Further reviews by Soren et. al. (2023) substantiates these findings regarding improved gut health and nutrient absorption.

In broilers, adding Boswellia serrata to their diet helped improve body weight, energy digestibility, and carcass quality by enhancing overall antioxidant levels and digestive enzymes. The use of KURACO™ Dry also improved fecal consistency, indicating better gut health and fewer loose droppings. Similarly, EEF accounts for the overall flock performance, measured by mortality, live weight, and feed conversion ratio (FCR), which showed better results in the treatment group, confirming findings from earlier studies by Jayaraman et. al. (2017) and Darsi et. al. (2021), which suggest these improvements benefit farmers' profitability.

The addition of PB6 not only boosted broiler performance but also improved return on investment (ROI). In agreement with present results, studies by Zaghari et al. (2017) and Darsi et. al. (2021) revealed that Bacillus subtilis treatment enhanced ROI by reducing feed cost per kg weight gain in broilers and feed cost (about 4.5%) per hatchling number in breeders compared to controls. However, challenges in broiler production arise from high density and feces accumulation, and antibiotic restrictions make it harder to maintain production levels. This has led the poultry industry to explore alternative and safer additives like probiotics, prebiotics, and phytochemicals.

KURACO™ Dry, which contains prebiotics, probiotics, and anti-inflammatory elements, showed positive improvements in livability, dropping consistency, and gut health in commercial broilers, indicating its potential to enhance overall poultry productivity.

CONCLUSION

The inclusion of KURACO™ Dry in the present study supports its application in commercial poultry farming, indicating that KURACO™ Dry not only boosts performance metrics but also promotes health and disease resistance. KURACO™ Dry could lead to the development of antibiotic-free feeding programs, thereby enhancing flock performance and return on investment in commercial poultry operations.

References are available upon request.

Dr. Bharat Sadarao, Dr. Venket Shelke, Dr. Partha Das, and Dr. R. Chanthirasekaran

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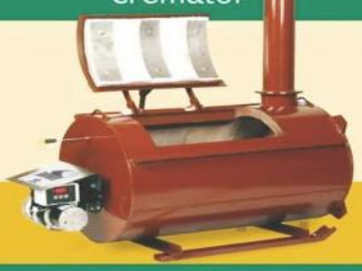
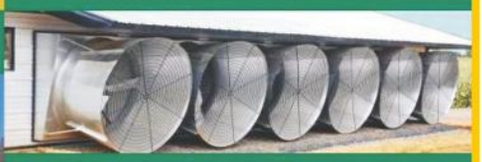


Nest Boxes

Ventilation System



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ILDEX Vietnam 2026

Positioning Vietnam as a regional hub for livestock and agro-food innovation

Ho Chi Minh City - On April 24, 2026, the Department of Animal Husbandry and Veterinary Medicine, the Agriculture and Environment Newspaper, in collaboration with the International Exhibition, Event and Technology Joint Stock Company (ITEC), held a press conference on the ILDEX Vietnam 2026 and Horti&Agri Vietnam 2026 exhibitions.

In his opening remarks, **Deputy Director of the Department of Animal Husbandry and Veterinary Medicine Pham Kim Dang** stated that ILDEX Vietnam 2026, themed *Clean Animal Husbandry - Green Production - Sustainable Value Chain Development*, clearly reflects the strong transformation trend of the animal husbandry industry towards environmentally responsible production, promoting digital transformation and building efficient and sustainable value chains.

"This event is of particular importance. The exhibition is not only a gathering place for the most advanced technologies in breeding, nutrition, equipment, processing, and veterinary medicine, but also a bridge to help Vietnamese businesses access global knowledge, enhance competitiveness, and expand export markets," Mr. Pham Kim Dang emphasized.

The leading international exhibition on livestock, dairy, meat processing, and aquaculture will take place from May 20-22, 2026, at the Saigon Exhibition and Convention Center (SECC). Organized by VNU Asia Pacific, this event marks its 10th edition in Vietnam, affirming its role as a crucial platform for business networking and knowledge sharing in Vietnam's rapidly developing livestock and agricultural food industries.

This year, the exhibition has expanded in scale with over 250 businesses from more than 25 countries and territories, and is expected to attract nearly 10,000 trade visitors over the three days.

Mr. Hoang Manh Ha, Deputy Editor-in-Chief of the Agriculture and Environment Newspaper, said that

ILDEX Vietnam has long been known as one of the most influential exhibitions in the livestock, veterinary, and food processing sectors in Southeast Asia. Furthermore, Horti&Agri Vietnam serves as an international meeting point for the fields of horticulture, horticulture, and high-tech agriculture, bringing together advanced solutions from production to post-harvest. The co-organization of these two exhibitions creates a comprehensive ecosystem, fully reflecting the development of modern agriculture - from livestock farming and crop cultivation to processing and distribution.

As the event organizer, **Mr. Kevin Zhao, Senior Project Director of VNU Asia - Pacific**, affirmed: "The future of the livestock industry is not simply about growth, but also about smart, sustainable, and resilient growth." He pledged that strong participation from businesses from Europe, North America, and Asia will bring a range of advanced technologies and solutions in the fields of animal feed, veterinary medicine, smart agricultural systems, food processing, and agricultural value chains.

One of the most anticipated highlights of the exhibition is the launch of the Vietnam National Pavilion, which brings together leading businesses such as Dabaco Group, Goovet, Travetco, Asia Veterinary, AVAC, SaigonVet, etc. The pavilion was built under the direction of the Ministry of Agriculture and Environment, in coordination with the Vietnam Poultry Association (VPA) and the International Exhibition, Event and Technology Joint Stock Company (ITEC). Alongside the exhibition, ILDEX Vietnam 2026 promises to deliver a series of high-level conferences and large-scale technical workshops, bringing together managers, experts, businesses, associations, and international organizations. Discussions will revolve around key topics: sustainable livestock development, digital transformation in agriculture, technological innovation, and global market trends.

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In addition, specialized business networking programs will be implemented by the organizers to optimize trade efficiency. These networking activities help businesses and visitors connect with the right potential partners, while also supporting delegations attending the exhibition.

In the context of Vietnam increasingly asserting its role as a regional center for agricultural production and export, ILDEX Vietnam 2026 is expected to become a

"strategic gateway" bringing together technology, investment, and global cooperation opportunities. With a network of international exhibitors and an integrated agricultural ecosystem, the exhibition promises to deliver outstanding business opportunities and drive the next phase of sustainable growth for the livestock and agricultural food industries.

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"strategic gateway" bringing together technology, investment, and global cooperation opportunities. With a network of international exhibitors and an integrated agricultural ecosystem, the exhibition promises to deliver outstanding business opportunities and drive the next phase of sustainable growth for the livestock and agricultural food industries.

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Global feed Enzymes Market on a Growth Trajectory

Valued at USD 1.49 billion in 2025, the market is projected to reach USD 2.38 billion by 2034. Asia Pacific has emerged as the most influential region, accounting for 34.51% of the global market share in 2025. This dominance underscores the region's significant role in shaping future demand.

Asia Pacific driving global expansion

The Asia Pacific region is currently driving global expansion in the animal farm and aquaculture sectors, particularly within India, China, Japan, and Southeast Asia. This growth is increasing the demand for high-quality feed products that enhance both efficiency and sustainability.

Feed enzymes are playing a critical role in this shift by allowing producers to replace traditional grains like soybeans, wheat, and corn, thereby reducing reliance on imports. Market projections for 2026 reflect this rapid adoption, with India's feed enzyme market is projected to reach USD 0.1 billion. Highlighting the region's rapid adoption of enzyme-based solutions.

Poultry remains the largest livestock segment, accounting for 43.14% of the global market in 2026, while swine feed continues to grow alongside pork consumption. These trends reinforce the region's increasing reliance on enzyme-based feed solutions.

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Enzymes transforming Asian livestock production

Recent reports emphasize nutrient utilization as a critical driver for adoption, as feed enzymes improve digestion, enhance nutrient absorption, and serve as sustainable alternatives to antibiotic growth promoters.

With several governments banning antibiotic growth promoters, the environment for enzyme-based solutions is increasingly favourable.

Opportunities and challenges within emerging markets specifically in India and Southeast Asia

These regions present significant potential for expansion, companies are increasingly investing in advanced formulations tailored to diverse animal species to strengthen their market presence.

However, we must address certain challenges, such as high production costs and inconsistent efficacy across species. While microbial fermentation is scalable, the complexity of the processes involved continues to drive up costs.

Despite these restraints, the Asia Pacific region remains dominant due to strong demand, supportive policies, and rising consumer expectations for sustainable food systems. With a focus on innovation and sustainability, Asia Pacific is well-positioned to lead the next chapter of growth in the feed enzyme sector.

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Beyond Acidification:
The Power of Buffered Organic Acids for Peak Poultry Performance

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1. Introduction

In commercial poultry production, water is the ultimate driver of performance. It is the flock's most vital nutrient, making up 60% to 85% of a bird's body weight and about 75% of an egg. A flock can survive for weeks without feed, but missing water for just a few days will devastate an operation. Typically, birds consume twice as much water as they do feed, a requirement that can easily quadruple during periods of extreme heat stress. Because daily water intake is a prime indicator of overall flock health and a core pillar of basic animal welfare, ensuring a safe, adequate supply is non-negotiable. However, providing volume is only half the battle—protecting water quality is where efficiency is won or lost. This is why water acidification has transitioned from an optional practice to a technical necessity, serving as a powerful tool to sanitize water lines, suppress harmful pathogens, and support optimal avian gut health.

2. Characteristics of Organic Acids in Poultry Nutrition

Organic acids are naturally occurring compounds that contain a carboxyl (-COOH) functional group responsible for their acidic nature. This category encompasses various carboxylic acids, including certain fatty acids and amino acids. As weak acids, organic acids only partially dissociate in water, a property that contributes significantly to their antimicrobial effectiveness.

Among them, short-chain organic acids (C1-C7) are particularly important due to their ability to inhibit the growth of harmful microorganisms. These acids include monocarboxylic acids such as formic, acetic, propionic, and butyric acids; hydroxyl-containing acids such as lactic, malic, tartaric, and citric acids; and unsaturated acids including fumaric and sorbic acids. Organic acids with pKa values ranging from 3 to 5 are generally considered most effective for antimicrobial applications.

3. The Scientific Basis of Using Buffered Organic Acids

Buffered organic acids are increasingly preferred in poultry production because they overcome many of the limitations associated with free (unbuffered) organic acids while maintaining their antimicrobial and gut health benefits.

3.1. Improved Stability and Reduced Corrosiveness

Conventional organic acids are highly acidic and can be corrosive to feed mill equipment, water lines, and drinking systems. Buffering agents partially neutralize the acid, reducing corrosiveness while preserving antimicrobial activity. This improves handling safety and extends equipment lifespan.

3.2. Sustained pH Reduction Throughout the Gastrointestinal Tract

Controlled Release Throughout the Gastrointestinal Tract

The major advantage of buffered organic acids is their ability to provide sustained acid availability throughout the digestive system.

Free organic acids act mainly in the upper digestive tract:

Crop → Proventriculus → Gizzard

Due to rapid dissociation, fewer active acid molecules may reach intestinal regions involved in nutrient absorption.

Buffered organic acids gradually release active molecules, extending their activity through:

Crop → Proventriculus → Gizzard → Duodenum → Jejunum → Ileum

Upper Digestive Tract Effects

Buffered acids help:

- Reduce microbial contamination from feed and water
- Maintain unfavorable conditions for pathogens
- Support gastric acidity
- Improve digestive enzyme activation

Intestinal Effects

Continuous acid availability supports:

- Suppression of harmful bacteria
- Stable intestinal microbial balance
- Improved digestion and absorption
- Better nutrient utilization

This controlled-release behavior allows buffered organic acids to function as targeted delivery systems rather than simple acidifiers.

3.3. Enhanced Palatability and Water Intake

The strong taste and odor of unbuffered acids can reduce feed and water consumption when inclusion levels are high. Buffered acidifiers are generally more palatable, minimizing negative effects on feed intake and ensuring consistent consumption.

3.4. Importance of Dissociated and Undissociated Forms in Buffered Organic Acidifiers

The antimicrobial efficiency of organic acids depends on their ability to maintain a balance between two chemical forms:

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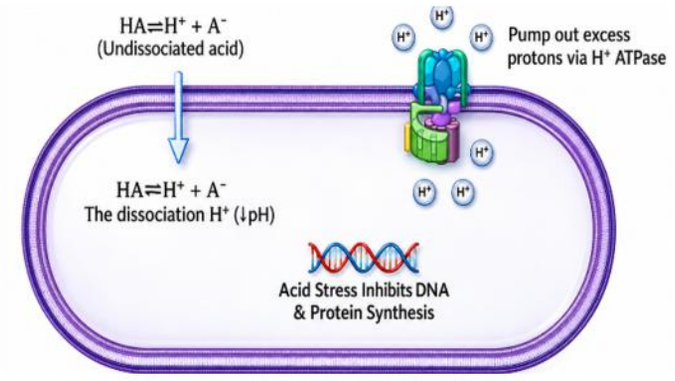
Undissociated form (HA) Dissociated form ($H^+ + A^-$)

Represented as: HA $H^+ + A^-$

Buffered acidifiers are designed to maintain a higher proportion of **undissociated acid molecules (HA)** across a wider pH range, allowing controlled and sustained antimicrobial activity throughout the gastrointestinal tract.



Role of the Undissociated Form (HA) - The Active Antimicrobial Form

The **undissociated acid molecule (HA)** is the most important form because it can pass through bacterial cell membranes.

Once inside the bacterial cell:

- HA dissociates into **hydrogen ions (H^+)** and **acid anions (A^-)**
- The release of H^+ reduces the internal pH of the bacterial cell
- The bacteria use excessive energy to restore pH balance
- This disrupts enzyme activity, metabolism, and growth
- Eventually, bacterial multiplication is inhibited

Role of the Dissociated Form ($H^+ + A^-$)

The dissociated form contributes mainly to:

- Lowering environmental pH
- Creating unfavorable conditions for pathogenic bacteria
- Supporting acidification of the digestive environment

However, because charged molecules cannot easily cross bacterial membranes, the dissociated form has limited direct antimicrobial penetration compared with HA.

3.5. Greater Compatibility with Modern Poultry Production Systems

Buffered acidifiers are easier to apply through drinking water and feed because they:

- Cause less fluctuation in water pH.
- Improve storage stability.
- Reduce handling hazards.
- Provide more predictable performance under commercial farm conditions.

4. Comprehensive Benefits of Buffered Organic Acids

4.1. Effective pH Reduction

The acidification efficiency of buffered organic acids is directly influenced by the initial water quality, particularly its alkalinity, hardness, and total dissolved solids (TDS). Alkalinity, primarily derived from bicarbonates and carbonates, represents the water's buffering capacity and is the most critical factor determining the amount of acidifier required to achieve the target pH. Water with high alkalinity resists pH change and therefore requires higher inclusion rates of acidifiers. Similarly, elevated hardness levels, resulting from calcium and magnesium salts, can increase acid demand by contributing to the buffering effect of water. Total dissolved solids (TDS), which reflect the overall concentration of dissolved minerals and salts, may also affect acidifier requirements depending on their composition. Consequently, water sources with higher alkalinity, hardness, and mineral content generally require greater quantities of buffered organic acids to achieve and maintain the desired pH range. For optimal results, dosage should always be adjusted based on water quality analysis rather than a fixed inclusion rate.

4.2. Long-Lasting pH Balance

Unlike conventional organic acids that may cause rapid pH fluctuations, buffered organic acids provide sustained pH control over an extended period. Once the target pH is achieved, the buffering system gradually releases acid molecules, counteracting the neutralizing effects of bicarbonates, minerals, and organic matter present in the water. This controlled-release mechanism minimizes pH rebound and helps maintain a stable acidic environment for several hours, ensuring continuous antimicrobial activity, improved water hygiene, and consistent protection against microbial proliferation throughout the drinking water system.

4.3. Broad-Spectrum Control of Waterborne Microorganisms

The combination of multiple organic acids provides a broader antimicrobial spectrum than individual acids alone. Different acids act synergistically to suppress a wide range of pathogenic microorganisms through complementary mechanisms of action. This multi-acid approach effectively controls:

- Pathogenic bacteria
- Yeasts and molds
- Biofilm-forming microorganisms
- Waterborne contaminants

The synergistic action of organic acids enhances microbial control while reducing the likelihood of microbial adaptation, thereby supporting safer and more hygienic drinking water.

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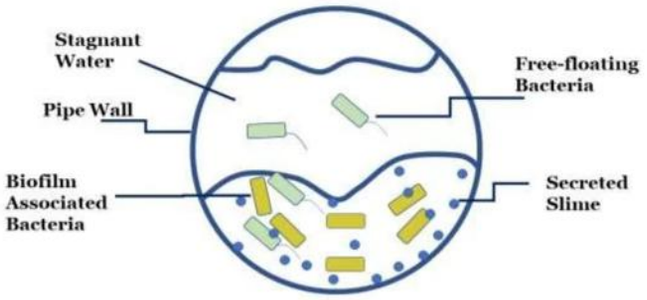
4.4. Biofilm Disruption and Pipeline Hygiene

Biofilms are structured microbial communities enclosed within a protective extracellular matrix that adheres to the inner surfaces of water pipelines. These biofilms serve as reservoirs for pathogens and can compromise water quality. Buffered organic acids help disrupt biofilms by weakening the protective matrix, inhibiting bacterial attachment and multiplication, and facilitating the gradual removal of existing deposits. Continuous acidification also helps prevent biofilm re-establishment, resulting in cleaner water lines, improved water flow, and enhanced sanitation throughout the distribution system.



Cross-sectional of the Pipe

4.5. Support for a Healthy Microbial Balance

Buffered organic acids create an environment that suppresses harmful microorganisms while favoring beneficial acid-tolerant bacteria. Many beneficial microbial populations, including Lactobacillus species, are naturally adapted to moderately acidic conditions and can thrive where pathogenic bacteria struggle to survive. As a result, buffered organic acids help reduce pathogen pressure, promote a balanced microbial ecosystem, support digestive health, and contribute to improved nutrient utilization and overall animal performance.

5.0 Conclusion

As poultry production continues to move toward improved biosecurity, reduced antibiotic dependence, and enhanced production efficiency, water quality management has become more critical than ever.

Buffered organic acids offer a scientifically proven and practical solution by combining effective pH reduction, sustained acidification, broad-spectrum antimicrobial activity, biofilm control, and support for a healthy gut microbiota. Unlike conventional acidifiers, their controlled-release properties provide longer-lasting efficacy and greater compatibility with modern poultry production systems. By improving drinking water hygiene and creating favorable conditions for digestive health, buffered organic acids help producers maximize bird performance, welfare, and profitability, making them an indispensable component of contemporary poultry management programs.

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- Oxytetracycline Hydrochloride

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VIP's 3rd National Symposium

Charts Roadmap for a Resilient and Future-Ready Poultry Industry

Vets in Poultry (VIP) successfully hosted its 3rd National Symposium 2026 at the Sheraton Grand, Rajajinagar, Bengaluru, bringing together leading poultry industry stakeholders, veterinarians, academicians, researchers, policymakers, entrepreneurs, students, and international delegates to deliberate on the future of India's poultry sector.

Held under the theme "Future Ready Poultry: Managing Risks, Maximising Resilience," the symposium served as a premier platform for scientific exchange, strategic dialogue, and industry collaboration, focusing on strengthening the resilience, sustainability, and global competitiveness of Indian poultry.

Welcoming the gathering, Dr C.B. Pathak, Vice President, VIP, highlighted the evolution of VIP into a vibrant technical platform committed to advancing poultry science, veterinary excellence, and industry development. He emphasised the importance of collective action in addressing emerging challenges and unlocking future growth opportunities.

Dr Santosh Ire, Secretary, VIP, reflected on the organisation's journey as a national technical body dedicated to empowering poultry veterinary professionals through knowledge sharing, continuing education, networking, and scientific advancement.

In his presidential address, Dr Ajay Deshpande, President, VIP, noted that the poultry industry stands at a critical juncture where innovation, risk management, and collaboration will define future success. He stressed that building resilience across the value chain is essential to navigating evolving disease threats, market dynamics, consumer expectations, and technological disruption.

Delivering the keynote address, Prof. (Dr.) K.C. Veeranna, Vice-Chancellor, Karnataka Veterinary, Animal and Fisheries Sciences University, underscored the critical role of education, research, and innovation in shaping the future of the poultry sector. He called for stronger academia-industry partnerships, skill development initiatives, and the adoption of emerging technologies.

Prof. (Dr.) P.K. Shukla, President of the Indian Poultry Science Association, Chairman of FSSAI Scientific Panel-13, and former Joint Commissioner (Poultry), Government of India, delivered a special address emphasising science-based decision-making, robust biosecurity frameworks, quality assurance systems, and supportive policy interventions to enhance India's global poultry competitiveness.

The symposium's Chief Guest, Mr Arjun Devaiah Theethamada, CEO of Abhimanyu Academy, South Asian Games Gold Medallist, and nine-time National Champion, inspired participants by drawing parallels between competitive sports and entrepreneurship. He highlighted resilience, discipline, adaptability, and continuous learning as essential attributes for sustained success in a rapidly changing world.

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Promoting Protein Awareness Through Youth Engagement

A key highlight of the event was the successful conclusion of VIP's 1st National Short Video Competition, designed to engage students in promoting protein awareness and scientific communication.

The competition encouraged young participants to advocate for protein security and highlight the nutritional importance of eggs and chicken as affordable, high-quality protein sources while countering misinformation through evidence-based messaging.

The winners were:

- Mr Kankatav Siddheshwar Dinkar – Rs. 25,000
- Mr Chilkuri Manish Reddy – Rs. 20,000
- Ms Kumari Sanjana – Rs. 15,000
- Mr Ishan Barik – Rs. 15,000

Special Recognition was awarded to Mr Shiva Holikeri.

Technical Sessions Address Key Industry Priorities

The symposium featured expert-led sessions covering critical areas shaping the future of the poultry industry:

- Future of Indian Poultry – Growth, Markets & Trade by Mr K.G. Anand, General Manager, Venkateshwara Hatcheries Pvt. Ltd.
- Farm Productivity & Operational Excellence by Dr Ajay Deshpande, President VIP and Founder & Director, Siddhivinayak Poultry Breeding Farm and Hatcheries, Pvt. Ltd.
- Consumer Perception, Branding & Market Expansion by Mr Sameer Agarwal, Managing Director, Shalimar Group
- Poultry Health, Biosecurity & One Health by Dr Gowthaman, Associate Professor, Veterinary College and Research Institute, Salem
- Human Capital & Industry **Transformation** by Mr Ashok Kumar, Managing Director, MAA Integrators

The sessions explored emerging opportunities in exports, feed economics, precision farming, branding, disease management, digital transformation, and workforce development.

Industry Leaders Discuss the Path from Survival to Scale

One of the most engaging segments of the symposium was the panel discussion on **"Future Ready Poultry – Survival to Scale,"** moderated by Prof. (Dr.) P.K. Shukla.

The distinguished panel brought together leaders from across the poultry value chain to discuss sustainability, scalability, farmer profitability, exports, innovation, biosecurity, and leadership.

A common theme emerged from the discussion: the future growth of Indian poultry will depend on scientific management, resilient supply chains, technology adoption, farmer empowerment, skilled manpower, and stronger collaboration among industry stakeholders.

Panellists emphasised that while the sector has demonstrated remarkable resilience, the next phase of growth will require data-driven decision-making, sustainable nutrition strategies, improved traceability, enhanced disease surveillance, and greater alignment with global standards.

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Panel Discussion – Quotabe Quotes

Moderator – Prof. (Dr.) P. K. Shukl

"The future of Indian poultry depends on scientific management, policy support, biosecurity excellence and strong industry-academia collaboration. Sustainability and scalability must progress together."

Mr O. P. Singh

"Technology adoption and operational efficiency are no longer optional but essential for sustainable poultry growth. Integrators must focus on innovation-driven productivity."

Mr. Valsan Parameswaran

India has immense potential to emerge as a significant poultry exporter. Quality standards, traceability and global market preparedness will be key drivers of future success."

Dr Vishal Singh Rawat

"The next phase of poultry development will be led by data-driven decision making, precision farming and smart production systems that improve profitability and resilience."

Mr. T. Srinithi

"Feed accounts for the largest share of production costs. Sustainable nutrition strategies and supply chain stability will play a crucial role in protecting industry margins."

Dr Mahesh P.S.

"Strong regulatory support, disease surveillance and coordinated stakeholder efforts are essential to safeguard poultry growth and farmer confidence."

Ranpal Dhanda

"Farmer sustainability must remain at the centre of industry growth. A resilient poultry sector can only be built when farmers are empowered with knowledge, technology and fair returns."

Mr. Divya Kumar Gulati

"Feed quality and innovation will continue to shape poultry performance. The industry must focus on efficiency, sustainability and responsible resource utilisation."

Mr. Uday Singh Bayas

"Industry associations have a vital role in uniting stakeholders and addressing common challenges. Collective action is necessary for long-term sectoral progress."

Dr. Jeetendra Varma

"Global poultry trends indicate increasing emphasis on animal welfare, biosecurity and sustainability. India must align with global best practices while maintaining competitiveness."

Dr. Meganathan

"Regional poultry sectors offer immense growth opportunities. Strengthening grassroots veterinary support and farmer education will accelerate inclusive development."

Dr. Damodar Pattath

"Health management remains the foundation of poultry success. Prevention through biosecurity and proactive disease monitoring is always more effective than treatment."

Dr. Swati Karki

"Consumer expectations are evolving rapidly. Innovation, transparency and science-based communication will define the future relationship between producers and consumers."

Mr. Naveen Pasuparthy

"Entrepreneurship and value-chain integration will create the next generation of poultry leaders. Agility and innovation will be critical for scaling businesses successfully."

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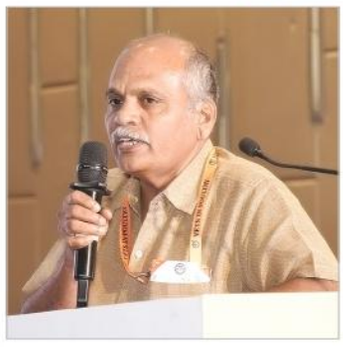


Concluding Session

Summarising the key takeaways, Prof. (Dr.) Ajit Ranade, Advisor, VIP, emphasised the importance of translating insights into actionable outcomes and commended the industry's readiness to embrace innovation and tackle future challenges collectively.

The symposium concluded with a vote of thanks by Major (Dr.) Vinod Kumar, who acknowledged the contributions of speakers, delegates, sponsors, exhibitors, media partners, industry associations, academic institutions, and the VIP organizing team.

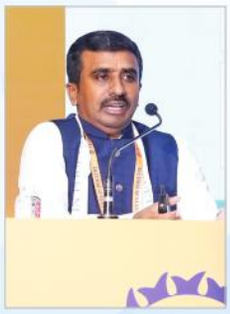
Looking Ahead

The 3rd National Symposium reaffirmed the poultry sector's commitment to scientific excellence, innovation, and collaboration. The event concluded with a shared vision of building a resilient, sustainable, and globally competitive poultry industry capable of meeting future challenges while capitalising on emerging opportunities.

About Vets in Poultry: For more information on this press release, please contact Dr Santosh Ire +91 9850979652 | vetsinpoultry@gmail.com

Vets in Poultry (VIP): Connecting Knowledge Strengthening Poultry Building the Future





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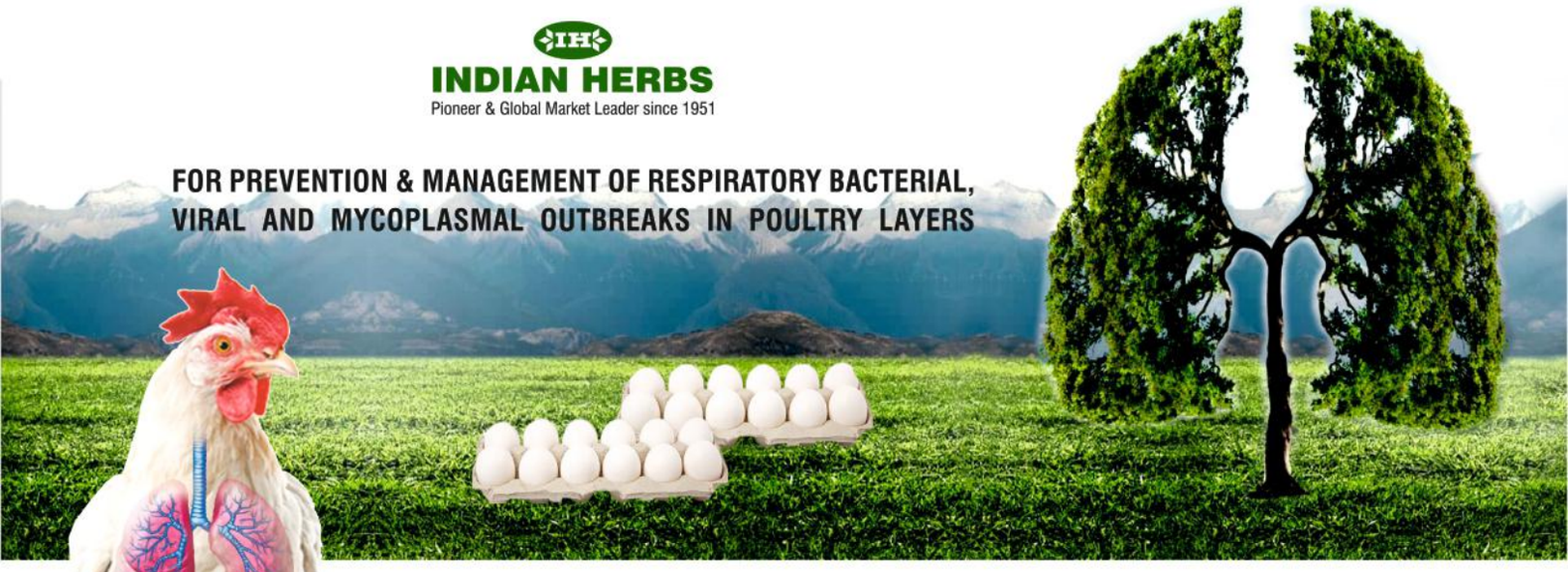

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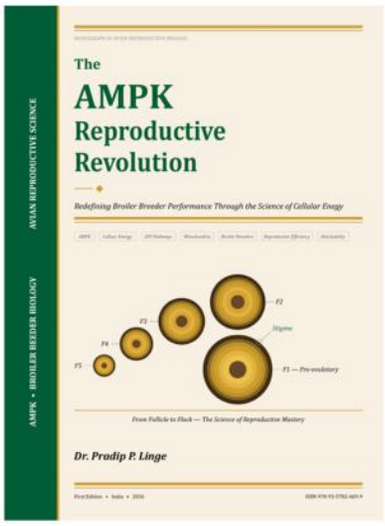
India's Poultry Scientists Join on a Breakthrough: The AMPK Reproductive Revolution

On June 10, 2026, the Sheraton Grand Bangalore Hotel became the setting for one of the most significant gatherings where veterinarians, consultants, breeder specialists, and industry leaders assembled by invitation for a Scientific Leadership Roundtable and the ceremonial pre-launch of a publication that promises to reframe how the sector thinks about reproductive performance in modern broiler breeders.



The publication at the centre of the evening the **AMPK Reproductive Revolution** is authored by Dr Pradip P Linge. Its central thesis: that AMP-activated protein kinase (AMPK), a cellular energy sensor, plays a pivotal and underappreciated role in determining breeder flock performance, from hatchability through to long-term bird vitality. The program was one of the kind due to achoring done by Dr. Jitendar Varma.

The Science Program

In his author address titled 'Why This Book Had to Be Written Now', Dr Linge argued that the industry has long focused on visible parameters feed intake, body weight, egg production curves while overlooking the cellular energy dynamics that ultimately drive those outcomes. AMPK, he contends, is the missing link.

Dr Nikita Deshmukh opened the formal presentations with a paper on 'Broiler Breeder Metabolism: The Hidden Driver of Reproductive Consistency'. Dr Sujit Menon followed by examining embryonic development as a direct reflection of breeder metabolic health connecting the parent bird's cellular condition to outcomes visible at the hatchery days later.

Industry Panel & Key Discussions

A moderated panel chaired by Dr Pankaj Shukla formed the centrepiece of the evening. Panellists including Dr Praharaj N K, Dr Rais Rajpura, Dr Ajay Deshpande, Mr Sameer Agarwal, Dr Ravindra Jaiswal, Dr Harsha Shetty, Dr Avinash Dhawale, and Dr Ravinder Reddy tackled flock consistency, hatchability concerns, and the role of science-driven management in addressing them. Several distinguished guests were also formally felicitated during the program.

The ceremonial pre-launch included special recognition for Dr Chin How Cheong, honoured as Guest of Honor and dedicatee of the publication, and Dr Sujit Menon as co-dedicatee a gesture that underlined the collaborative intellectual lineage behind the work.

What This Signals for Indian Poultry

India's poultry sector has grown rapidly, and with that growth has come pressure to improve efficiency, reduce losses, and elevate reproductive management standards. The Bengaluru roundtable reflects a maturing industry one where producers and researchers increasingly recognise that empirical biology, not rule-of-thumb management, must underpin the next phase of growth.

If the science behind the **AMPK Reproductive Revolution** holds at scale, the practical implications for hatchability protocols, nutritional management, and flock longevity strategies could be considerable. The networking dinner that closed the evening was, in that sense, a continuation of a conversation the Indian poultry industry has been building toward for years.

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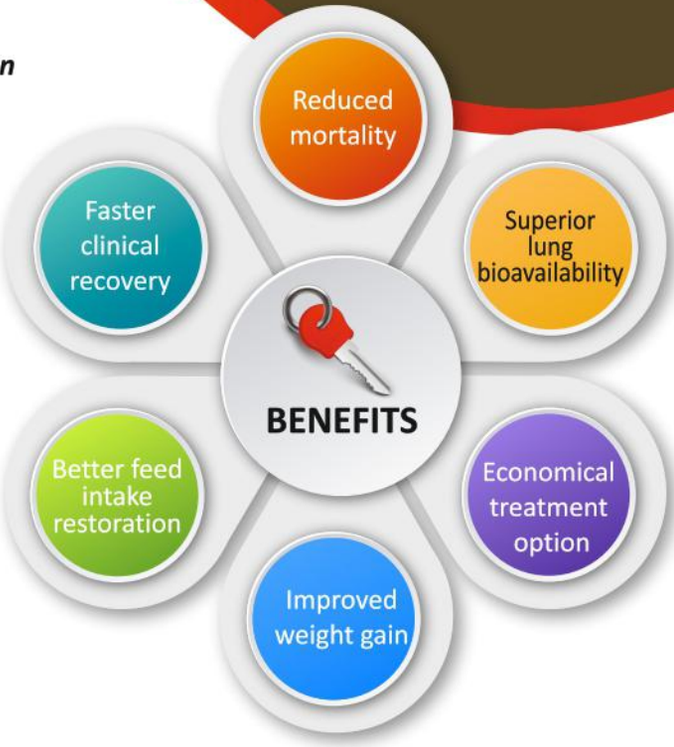

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Dr. Pradip P


Thank you.


Dr. Harsha Sh
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Empowering Poultry Professionals:

Regen Biocorps' Summer Management Workshops at Khujner & Azamgarh

As temperatures continue to rise across India, heat stress remains one of the most significant challenges affecting poultry health, productivity, and farm profitability. Recognizing the need for practical, science-backed solutions at the field level, Regen Biocorps Animal Health India Pvt. Ltd. successfully organized two impactful **Summer Management Workshops** at **Khujner, Rajgarh (Madhya Pradesh)** on **26th May 2026** and **Azamgarh (Uttar Pradesh)** on **5th June 2026**.

These knowledge-sharing initiatives reflected Regen Biocorps' commitment to supporting poultry farmers with timely technical guidance and innovative health management solutions designed to combat seasonal challenges.

Addressing the Growing Threat of Heat Stress

Heat stress is often referred to as the "silent productivity killer" in poultry farming. Unlike mammals, birds lack sweat glands and rely primarily on panting to regulate body temperature. During extreme summer conditions, prolonged heat exposure can lead to dehydration, reduced feed intake, compromised immunity, poor growth performance, increased disease susceptibility, and elevated mortality rates.

The workshops focused on equipping poultry producers with practical summer management strategies, including:

- Ensuring uninterrupted access to cool, clean drinking water
- Feeding birds during cooler periods of the day
- Improving ventilation and airflow at bird level
- Utilizing shade nets and evaporative cooling systems
- Maintaining proper litter quality and house hygiene

These simple yet effective interventions can significantly reduce the adverse effects of heat stress and help maintain flock performance during challenging weather conditions.

Khujner Workshop: Strengthening Farmer Engagement Through Technical Knowledge

The workshop at Khujner was conducted under the leadership of **Mr. Sachin Kakde (Regional Sales Manager)** and **Mr. Dhananjay Singh (Sales Executive)**. The event witnessed enthusiastic participation from over **55 progressive poultry farmers** from the Rajgarh region.

The interactive session encouraged farmers to openly discuss field-level challenges while Regen Biocorps experts provided scientific explanations and practical recommendations. The company's summer healthcare portfolio received an encouraging response from attendees.

Among the products discussed, **Thermogard**, Regen Biocorps' heat stress management solution, attracted considerable interest as a new addition to the portfolio. Farmers also shared positive experiences with **CRDX-IR** for respiratory health management and **Colikil-R** for controlling *E. coli* related challenges. **Immon** and **Hepatotox-ES** were appreciated for their roles in strengthening immunity and supporting liver health during periods of environmental stress.

A notable participant was **Mr. Hemraj Dangi** (Proprietor of Ankit Poultry), a respected chick and feed supplier in the region. His active involvement further enhanced farmer engagement and strengthened the credibility of the technical discussions.

Azamgarh Workshop: Advancing Summer Health Management

The Azamgarh workshop was led by **Mr. Rahul Bhatnagar (SM - Institutional Business)**, who highlighted the critical role of immunity in helping birds withstand summer stress and disease challenges. The program was supported by **Mr. Ritesh Srivastava (Regional Sales Manager)**, **Mr. Akhilesh Tiwari (Area Sales Manager)**, and **Mr. Ashish Kumar Singh (Area Sales Manager)**.

The workshop was honoured by the presence of **Chief Guest Dr. Shabbir Ahmad Khan**, a highly respected poultry professional in the region. Drawing from his extensive field experience, Dr. Khan addressed key industry concerns such as heat stress management, viral disease challenges, *E. coli* infections, and maintaining gut health during adverse climatic conditions.

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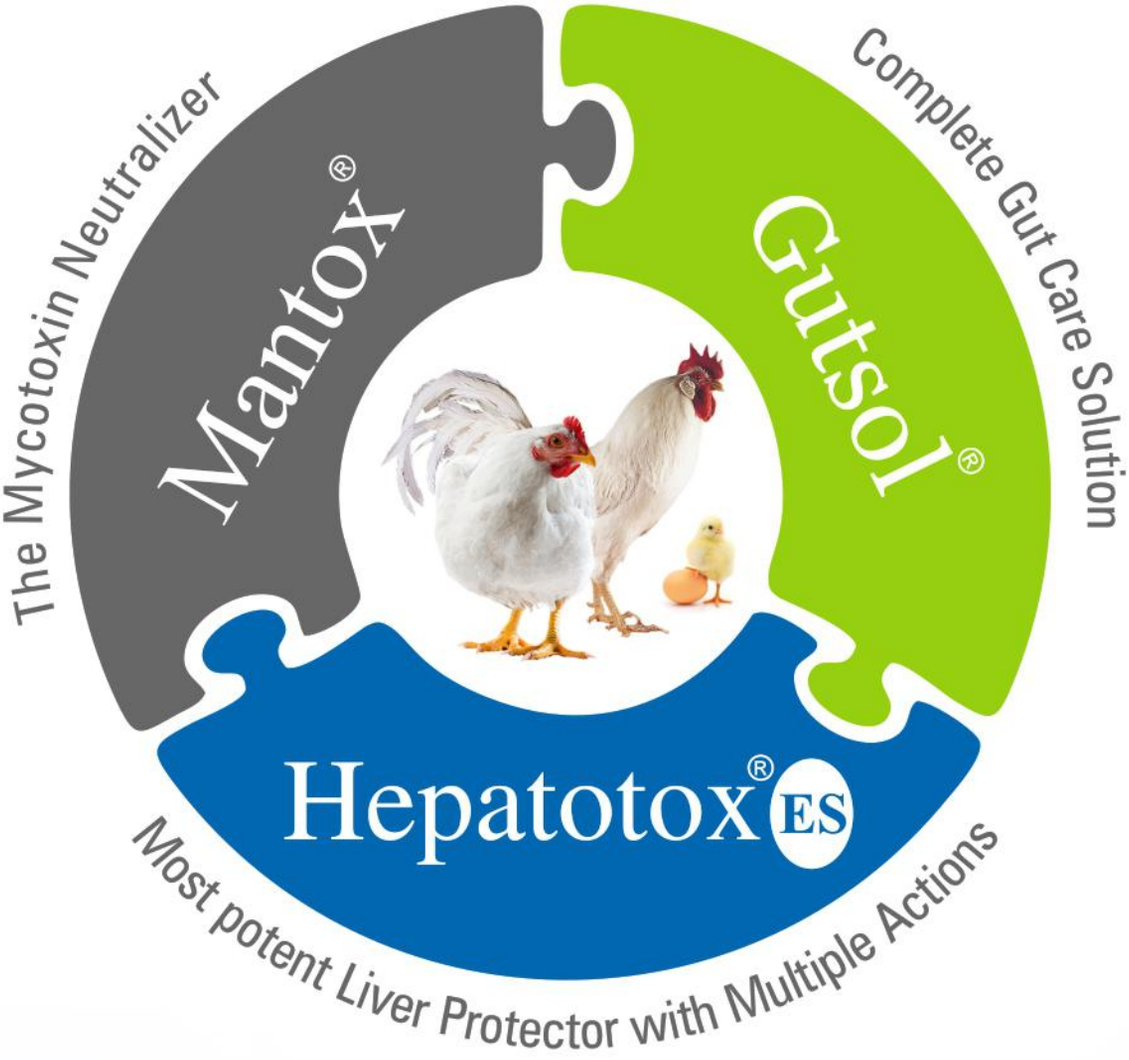

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The event attracted more than **75 poultry stakeholders**, including broiler, layer, and breeder farmers, feed millers, and integrators.

Participants were introduced to Regen Biocorps comprehensive summer management portfolio, including: **Immon** (The Most Potent Immuno-Strengthener) **Gutsol** - (Complete Gut Care Solution), **Thermogard** - (Z-Level Summer Protection) **Hepatotox-ES** - (Most Potent liver Protector with Multiple Actions)

The technical presentations generated significant interest, particularly among layer farmers. Nearly **40 % of participants actively engaged in the question-and-answer session**, reflecting the strong demand for practical, evidence-based poultry management solutions.

The program concluded with a community dinner, providing an excellent platform for networking and strengthening relationships among farmers, industry professionals, and the Regen Biocorps team.

Driving Sustainable Poultry Growth Through Knowledge

At Regen Biocorps, empowering poultry farmers through education, innovation, and field-level support remains a core priority. The success of both workshops reflects the organization's unwavering commitment to improving poultry health and farm profitability across India.

These initiatives continue to be guided by the visionary leadership of **Mr. Pawan Kumar Mudgil, Founder & CEO**, and **Mr. Pankaj Hastwala, National Sales Manager**, whose dedication to advancing sustainable poultry farming is helping create a stronger and more resilient poultry industry.

Through continuous farmer engagement and technical empowerment, Regen Biocorps remains committed to delivering practical solutions that enable poultry producers to successfully navigate seasonal challenges and achieve long-term success.

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Engineering Poultry Resilience:
From Climate Shock to Science-Driven Performance

Dr. Gopal Potdar & Dr. Hardik Patel

Abstract

The El Niño-Southern Oscillation (ENSO) is a major driver of interannual climate variability that significantly affects agricultural and livestock systems worldwide. In India, El Niño events are typically associated with weakened Southwest monsoon rainfall, elevated ambient temperatures, increased frequency and intensity of heat waves, and prolonged dry spells. These climatic shifts pose serious challenges to the poultry sector, one of India's fastest-growing agricultural industries that supports food security, nutrition, and rural livelihoods. This comprehensive review synthesises scientific evidence on the direct and indirect impacts of El Niño on poultry production, encompassing feed resource constraints, heat stress physiology, immune suppression, water scarcity, disease dynamics, and economic instability. It further integrates translational, mechanism-based strategies using targeted nutritional and health interventions from Regen Biocorps, including **Thermogard**, **Gutsol**, **Colikil-R**, **Immon**, and **Hepatotox-ES**. The analysis underscores the urgent need for integrated climate-resilient approaches combining scientific management, technological innovation, and supportive policy frameworks to safeguard poultry productivity amid increasing climatic variability.

1. Introduction

The El Niño Southern Oscillation (ENSO) involves periodic fluctuations in sea surface temperatures and atmospheric pressure in the equatorial Pacific, with the warm El Niño phase disrupting global atmospheric circulation patterns (Iizumi *et al.*, 2014). India's climate, especially the Southwest monsoon, is highly sensitive to ENSO. El Niño years are characteristically marked by below-normal monsoon rainfall, delayed onset, higher temperatures, and more frequent heat waves (Royal Meteorological Society, 2003).

India's poultry industry has experienced rapid expansion and plays a critical role in supplying affordable animal protein, generating employment, and contributing to agricultural GDP. However, its biological sensitivity and economic dependency on climate-linked inputs (feed, water, and ambient conditions) make it highly vulnerable to El Niño events. This review compiles scientific understanding of these impacts and presents practical, mechanism-driven translational applications using Regen Biocorps solutions.

2. Climatic Effects of El Niño in India

During El Niño episodes, the weakening of the Indian monsoon leads to:

- Reduced rainfall, often below 90% of the long-period average
- Increased frequency and duration of heat waves
- Elevated mean and maximum temperatures
- Prolonged dry spells and drought-like conditions

These changes can cause a 1-15% decline in foodgrain production (Royal Meteorological Society, 2003), with cascading effects on poultry through feed availability, water access, and direct thermal stress on birds.

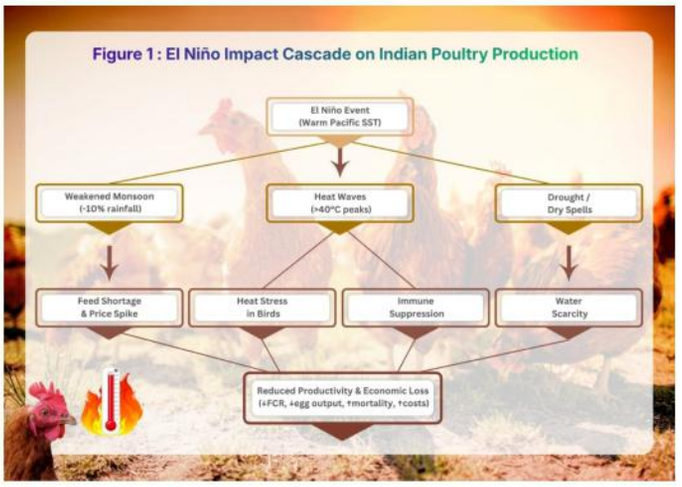

Figure 1: El Niño Impact Cascade on Indian Poultry Production

3. Impact on Feed Resources and Economic Stability

Poultry feed accounts for 70-75% of total production costs and depends heavily on monsoon-dependent crops such as maize and soybean. El Niño-induced rainfall deficits and higher temperatures reduce crop yields (Iizumi *et al.*, 2014), leading to supply shortages, quality deterioration, and sharp price inflation. Farmers often respond by reducing flock size, switching to inferior feed, or delaying cycles, all of which affect profitability.

Additional economic burdens include higher costs for cooling, water extraction, and veterinary care, disproportionately affecting smallholder farmers.

4. Heat Stress and Poultry Physiology

Poultry lack sweat glands and rely on panting for heat dissipation. Their thermoneutral zone is approximately 18-24°C. El Niño-associated heat waves frequently push temperatures beyond this threshold, inducing heat stress.

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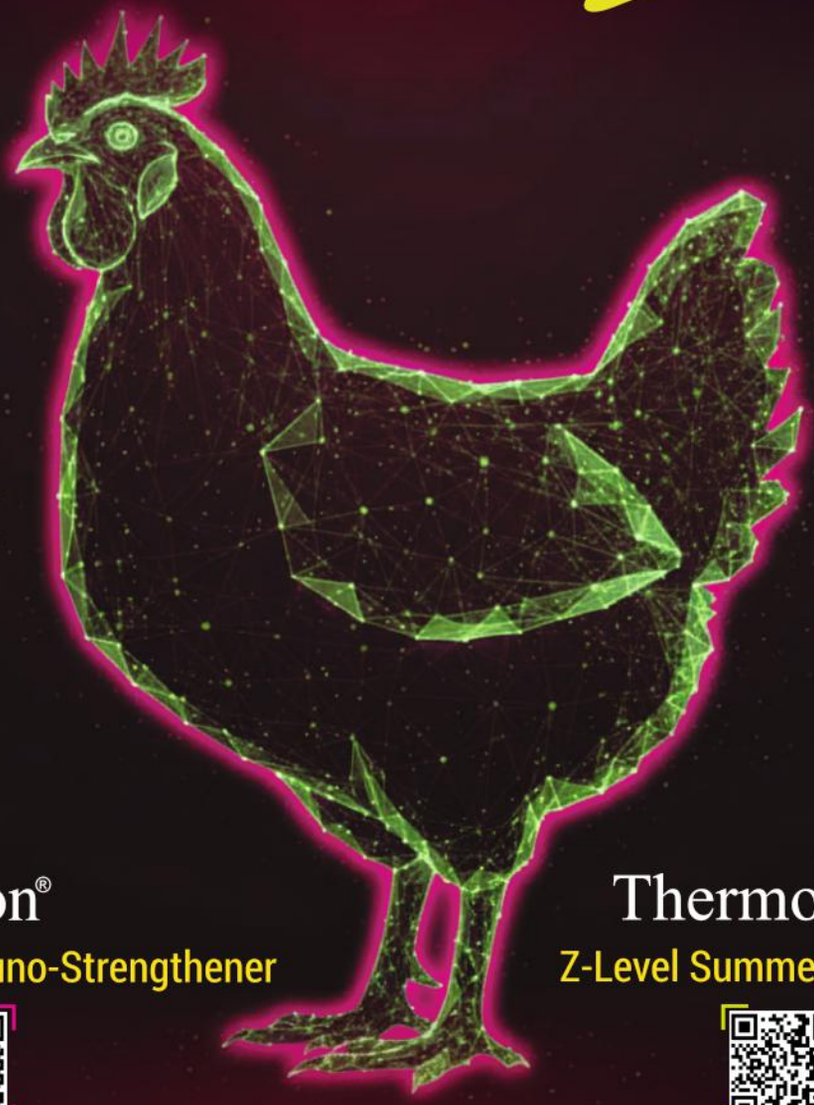

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Physiological Mechanisms: Activation of the hypothalamic-pituitary-adrenal (HPA) axis elevates corticosterone, triggering oxidative stress, metabolic disruption, reduced nutrient utilisation, and inflammation (Oluwagbenga & Fraley, 2023; Lara & Rostagno, 2013).

Production Impacts:

- **Broilers:** Reduced feed intake, deteriorated feed conversion ratio (FCR), and 10–20% decline in body weight gain.
- **Layers:** Up to 25% drop in egg production, poorer shell quality, and reduced egg weight.
- **Mortality:** High risk of heat stroke and dehydration above 36°C, especially in open housing systems common in India (Das *et al.*, 2014; Wasti *et al.*, 2020).

Translational Intervention: THERMOGARD is a comprehensive anti-heat stress formulation combining phytogenic extracts, electrolytes, osmolytes, minerals, and antioxidant vitamins. It supports thermoregulation, counters oxidative stress, maintains electrolyte balance, sustains feed intake and FCR, reduces mortality, and helps preserve growth and egg production during peak El Niño heat waves.

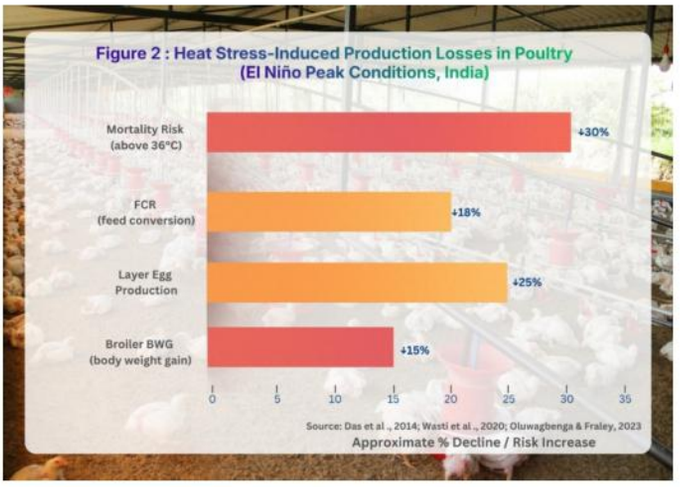

Figure 2: Heat Stress-Induced Production Losses in Poultry

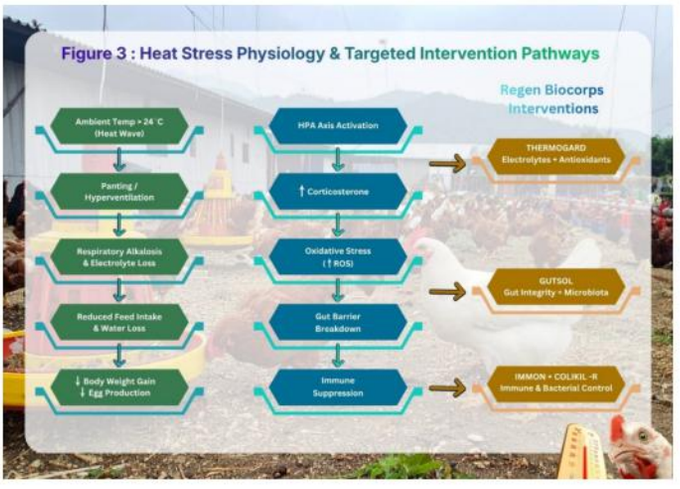

Figure 3: Heat Stress Physiology & Targeted Intervention Pathways

5. Immune Suppression and Disease Risk

Heat stress impairs immune function by reducing lymphocyte activity, antibody production, and vaccine efficacy, increasing susceptibility to bacterial (e.g., *E. coli*, *Clostridium perfringens*), viral, and enteric pathogens such as necrotic enteritis and coccidiosis (Mijgar, 2024; Oke *et al.*, 2024). Dry, dusty conditions during El Niño further promote airborne disease transmission.

Translational Interventions:

- **IMMON**: A natural immune booster that strengthens overall immune response, enhances disease resistance, and supports flock resilience under stress-induced immunosuppression.
- **COLIKIL-R**: Targeted support for managing *E. coli* and other gram-negative infections, helping control colibacillosis, airsacculitis, omphalitis, and early chick mortality, particularly during brooding under fluctuating El Niño temperatures.

6. Water Scarcity and Quality Issues

Poultry consume 2–4 times more water than feed. El Niño exacerbates groundwater depletion, reduces water availability, and increases Total Dissolved Solids (TDS), salinity, and contaminants. Poor water quality reduces intake, impairs medication/vaccine efficacy, and worsens dehydration.

Supportive water sanitation, and stabilisation strategies become critical during such periods.

7. Gut Health Disruption and Liver Function under Stress

Heat stress compromises intestinal barrier integrity ("leaky gut"), leading to dysbiosis, reduced nutrient absorption, increased enteric disease incidence, wet litter, and poorer FCR. Additionally, oxidative stress and metabolic load can impair liver function, affecting detoxification and overall performance.

Translational Interventions:

- **GUTSOL**: A 100% natural complete gut care solution enriched with herbal oils and extracts. It supports intestinal integrity, balances gut microbiota, reduces non-specific diarrhoea, litter moisture and ammonia, controls necrotic enteritis and coccidiosis challenges, and improves nutrient absorption and FCR under heat stress.
- **HEPATOTOX-ES**: An advanced liver support tonic that promotes liver cell regeneration, enhances detoxification, improves digestion, and aids overall metabolic health during periods of oxidative and toxic stress induced by heat and feed variability.

8. Structural Challenges in Indian Poultry Systems

Open housing systems, limited climate control infrastructure, heavy dependence on monsoon agriculture for feed, and a large smallholder base amplify El Niño vulnerabilities.

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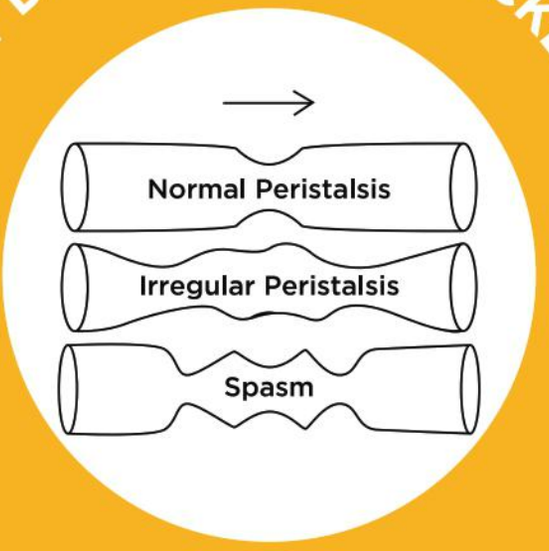

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9. Adaptation and Mitigation Strategies

Effective resilience requires layered interventions:

Environmental & Nutritional Management:

- Improved ventilation, foggers, reduced stocking density, and feeding during cooler hours.
- **THERMOGARD** for proactive heat stress mitigation.

Gut and Immune Support:

- **COLIKIL-R** for early bacterial challenge management.
- **GUTSOL** for intestinal integrity and enteric disease control.
- **IMMON** for immune strengthening.

Liver and Metabolic Support:

- **HEPATOTOX-ES** to safeguard liver function under stress.

Water Management:

- Rainwater harvesting, storage, quality monitoring, and sanitizers.

Health & Technological Measures:

- Strengthened biosecurity, timely vaccination, precision farming tools, and climate sensors.

10. Integrated Climate-Resilience Framework Using Regen Biocorps Solutions

El Niño stressors converge on key biological pathways: oxidative/heat stress, gut barrier breakdown, immune suppression, bacterial challenges, and liver/metabolic overload. An integrated program can be structured in phases:

Phase	Primary Challenge	Key Regen Biocorps Solution(s)	Expected Benefit
Pre-Heat Conditioning	Gut vulnerability, oxidative load	GUTSOL + IMMON	Stronger gut barrier & baseline immunity
Peak Heat Stress	Heat stress, reduced intake	THERMOGARD	Lower mortality, sustained FCR & intake
Early/Brooding Stage	Temperature fluctuations, infections	COLIKIL-R + IMMON	Reduced early chick mortality & colibacillosis
Recovery & Ongoing	Gut repair, liver support, immunity	GUTSOL + IMMON + HEPATOTOX-ES	Improved digestion, detoxification & resilience
Water Stress Periods	Poor quality & hydration	Supportive sanitation + THERMOGARD / GUTSOL	Better hydration & medication efficacy

This mechanism-based approach—complementing good management practices (ventilation, biosecurity, hygiene)—helps translate scientific insights into sustained productivity under El Niño conditions. All products should be used under veterinary supervision, in compliance with local regulations and antimicrobial stewardship principles.

11. Future Outlook and Conclusion

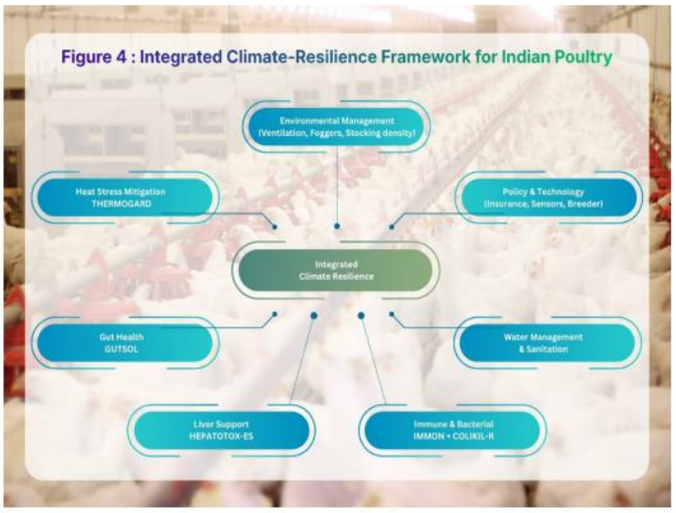

Figure 4: Integrated Climate-Resilience Framework for Indian Poultry

Climate projections indicate rising frequency and intensity of El Niño events, leading to more frequent heat waves, feed volatility, and water stress. Without adaptation, poultry productivity and economic viability in India face significant threats.

In conclusion, El Niño exerts multi-dimensional impacts on Indian poultry production through direct heat stress and indirect disruptions to feed, water, immunity, and economics. Heat stress acts as the central trigger, cascading into gut dysfunction, immune suppression, disease outbreaks, and performance losses. Targeted, science-aligned interventions such as **THERMOGARD** (heat stress), **GUTSOL** (gut integrity), **COLIKIL-R** (bacterial control), **IMMON** (immunity), and **HEPATOTOX-ES** (liver support) from Regen Biocorps offer practical tools to engineer resilience by addressing specific physiological pathways.

By combining these mechanism-driven solutions with environmental management, technological innovation, and policy support, the Indian poultry sector can mitigate El Niño risks and continue contributing robustly to national food and nutritional security.

In an unpredictable climate, poultry productivity must be strategically engineered through scientific solutions rather than left to chance.

Author
Dr. Gopal Potdar
Dr. Hardik Patel

**References are available on request*

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Introduction

The modern poultry industry is under increasing pressure to optimize efficiency following the phase-out of antibiotic growth promoters (AGPs). To achieve this, we must prioritize gastrointestinal tract (GIT) health to ensure effective nutrient assimilation and robust immunity.

Growing concerns regarding antimicrobial resistance and food safety risks from antibiotic residues necessitate a shift toward safe, natural alternatives. Non-AGP solutions provide residue-free options that enhance bird health without contributing to resistance. A sustainable strategy moving forward involves integrating improved hygiene, biosecurity, and management practices to focus on meat safety, gut health, and an improved Feed Conversion Ratio (FCR) through optimal nutrient absorption.

> **"ANTIBIOTICS MAY SOLVE TODAY'S PROBLEMS; THEY CREATE SIGNIFICANT RISKS FOR TOMORROW."**

Antibiotic Misuse in Poultry: A Global Health Threat

Antimicrobial Resistance (AMR) in the Indian poultry market is a major concern, largely due to the continued use of Antibiotic Growth Promoters (AGPs). High levels of resistance have been found in common poultry pathogens like *Salmonella, E. coli* and *clostridium* in key production hubs. While India has implemented a National Action Plan (2017) and banned the "last-resort" antibiotic Colistin (2019) for use in food-producing animals, AGPs remain common due to weak regulation and lack of awareness, despite recommendations from the Bureau of Indian Standards (BIS) against their use.

While Antimicrobial Growth Promoters (AGPs) provide effective short-term control, their long-term consequences are significant and cannot be overlooked. These issues include the development of Antimicrobial Resistance (AMR), the presence of residues in meat and eggs, which raises food safety concerns, disruption of the natural gut microbiota, and escalating regulatory restrictions and export limitations..

Understanding the Core Challenge: Gut Health

Modern poultry performance is closely linked to gut efficiency and microbial balance. A compromised gut leads to poor nutrient absorption, increased feed conversion ratio (FCR),

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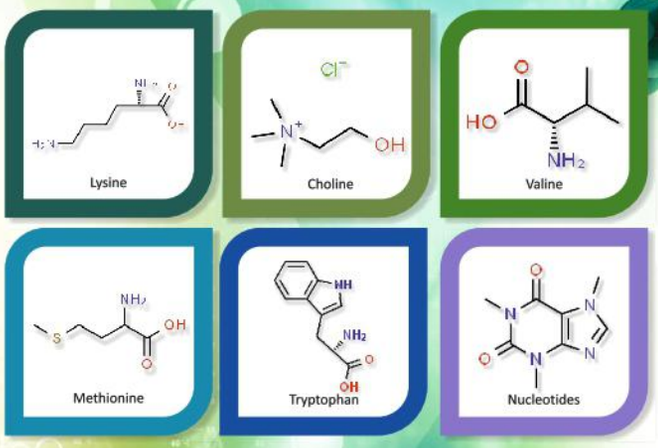

To achieve high efficiency poultry farming, a finely balanced feed formula with high bioavailability of feed nutritional fractions especially of critical ingredients including limiting amino acids, trace minerals etc., are required. To attain this balance, supplementation becomes extremely crucial to attain maximum bird performance and productivity.

Supplementation of limiting amino-acids and other related nutritional ingredients including major and trace minerals can support in improving the bird performance by assisting in providing additional nutritional molecules, to make up for any deficiency of critical nutrients in feed and feed ingredients.

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wet litter and ammonia issues, and higher susceptibility to infections such as necrotic enteritis.

A key contributor to this imbalance is the presence of undigested feed components, particularly non-starch polysaccharides (NSPs) and complex proteins.

These undigested nutrients become a breeding ground for harmful bacteria, triggering gut dysbiosis and performance losses.

Targeted Control: A Biological and Precise Approach to a Shifting Paradigm

Instead of broadly suppressing microbial populations, a more advanced strategy is to selectively control harmful bacteria while supporting beneficial gut flora. This is where alternative, non-antibiotic solutions are gaining significant attention. One such strategy involves leveraging naturally occurring compounds, known for their potent antimicrobial properties. These alternatives often target the integrity of pathogenic bacterial cell membranes or interfere with their communication (quorum sensing), thereby controlling the proliferation of both Gram-positive and Gram-negative organisms.

Unlike conventional antibiotics that act broadly and may disturb microbial balance, this approach enables a more precise and biologically aligned modulation of the gut ecosystem.

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Unlike conventional approaches, Gallinase enables birds to perform efficiently by optimizing their internal ecosystem rather than relying on external suppression.

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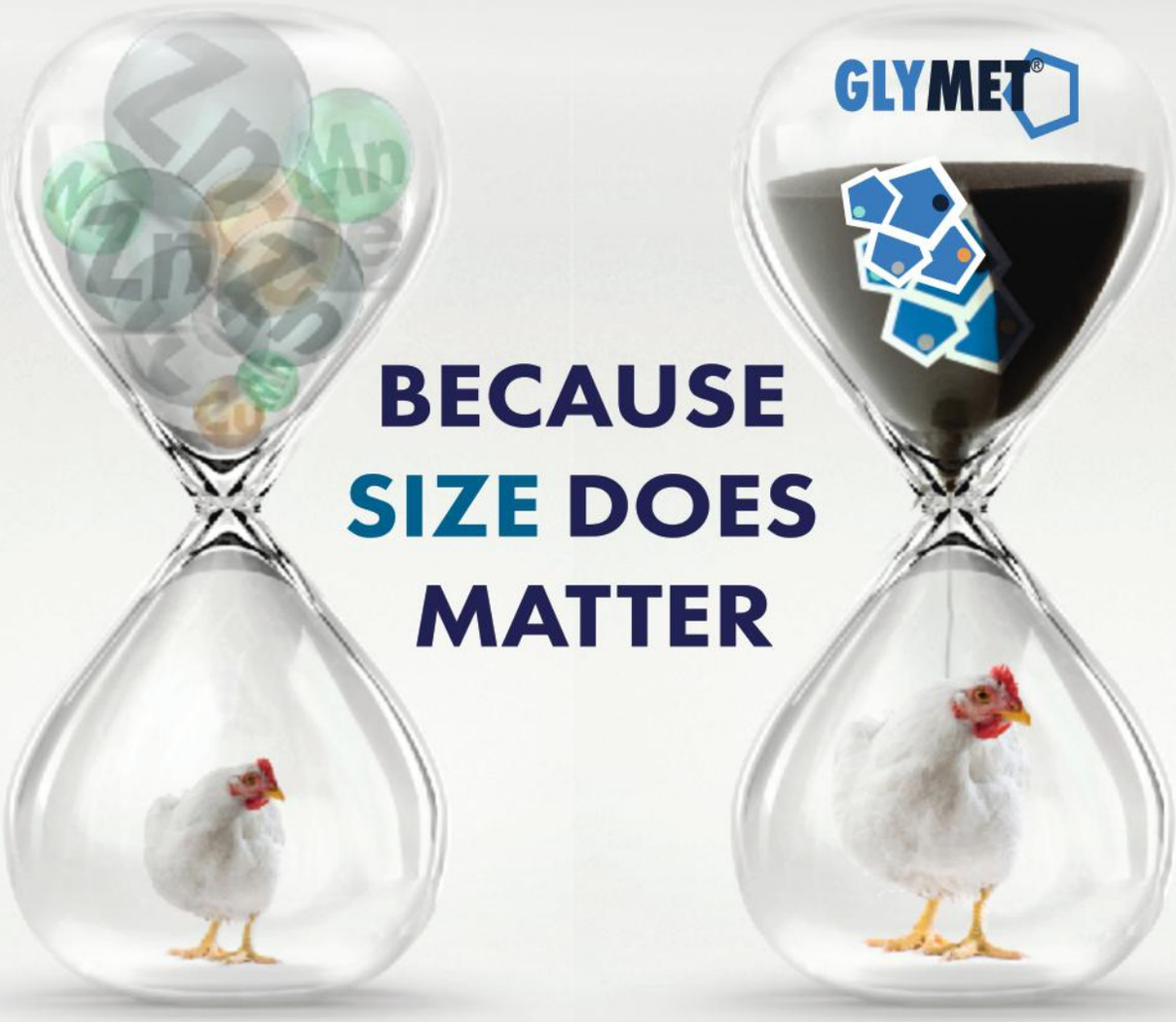

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Comparative Effect of Gallinase in Broiler Diet

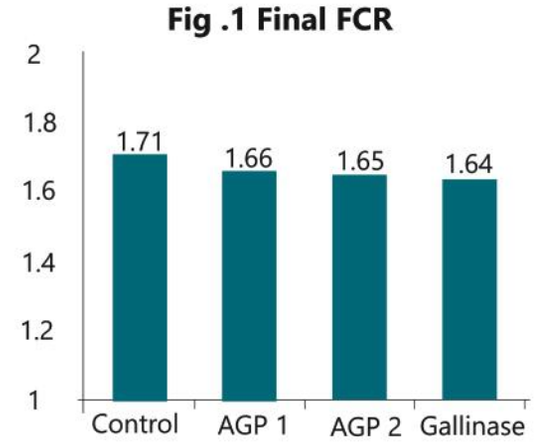


Fig. 1 Improved FCR in the GALLINASE group compared to the AGP 1, AGP 2 & Control (Non GALLINASE) group.

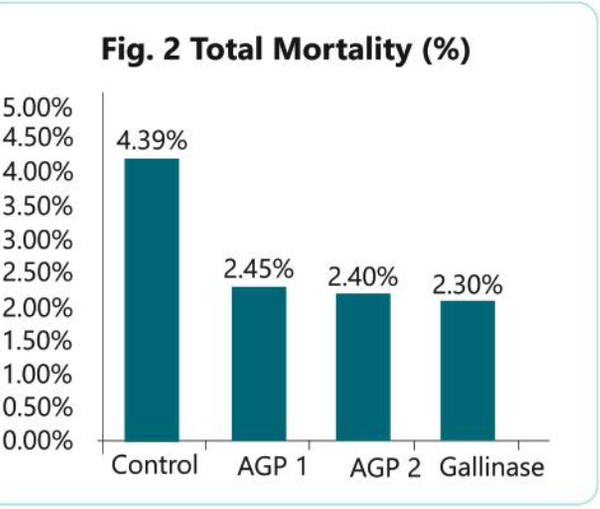
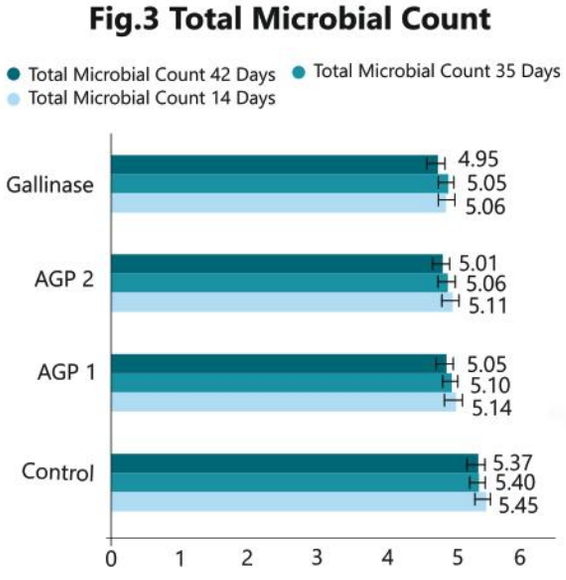


Fig. 2 Reduced Mortality in the GALLINASE group compared to the AGP 1, AGP 2 & Control (Non GALLINASE) group.



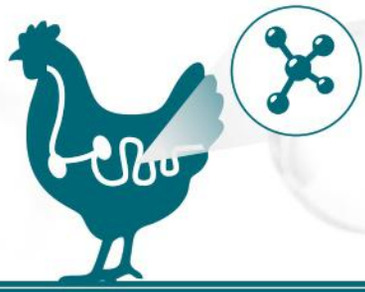


Fig. 3 There is significant reduction in the microbial count in **GALLINASE treated group** in comparison to the AGP 1, AGP 2 and Control (Non GALLINASE) group.

*Log_{10} basis values

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About Dr Wahi

- Dr Wahi holds a **Master of Veterinary Science (M.V.Sc.)** degree in **Poultry Pathology** from Punjab Agricultural University, Ludhiana.
- He brings **35 years of experience** in the poultry industry and provides technical guidance to poultry farms, including broiler and layer farms, as well as feed mills.
- He is running a poultry lab in Ludhiana and also offers online technical guidance to poultry farms across **Punjab, Haryana, Himachal, Rajasthan,** and **Jammu & Kashmir.**
- He also provides guidance for **pet birds and pigeons.**

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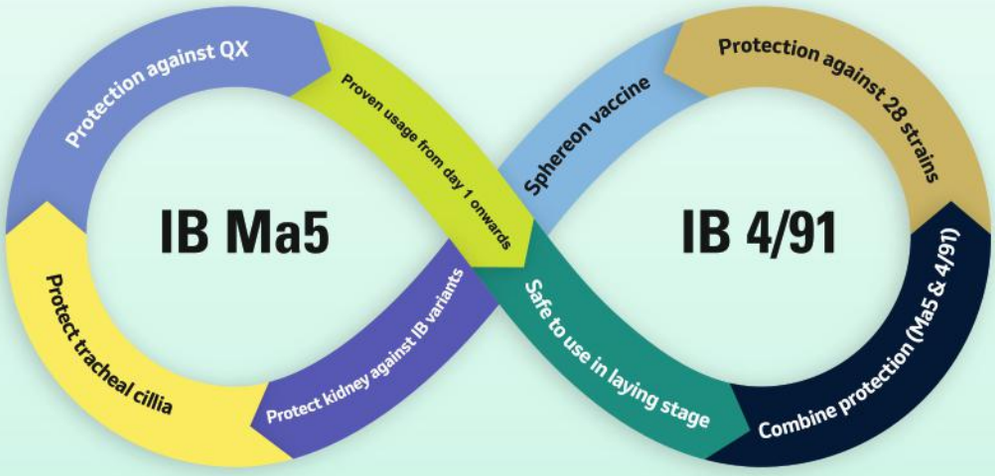

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