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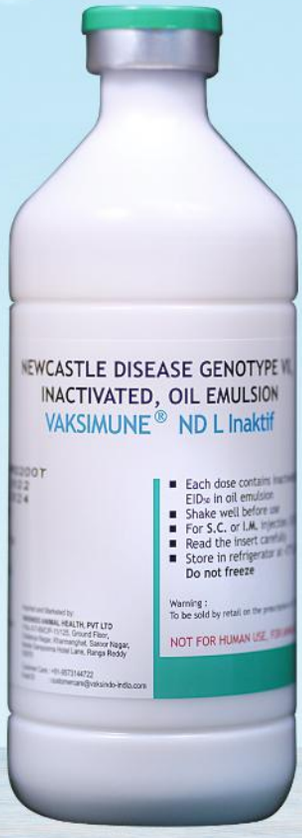

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Treating Life Naturally

From the Editor's Desk

The Nobel lust!

The current American president is making it known to everyone that he needs his Nobel Prize at all costs. The Norwegian Authority was called to trade the Nobel prize for a lower tariff. India is the biggest villain because it does not support his fancy and encourages him in his desire. Today's America is highly unpredictable, causing considerable chaos both locally and globally. Quixotic actions have blasted the years of International relationships and the delicate fabric of understanding. Rather than the national interest, he seems to be guided by personal and emotional decisions.

What more validation is required to experience the law of karma? When one elects a comedian, he makes a joke of the whole country, while it is just a play for the President-elect, millions of livelihoods and the future of the people have been destroyed. Elect a businessman as your President and the whole country becomes a transaction, throwing the years of international relationships forged with trust and time to array. Holding a title of superpower, the President of such a country, every word must be valued as a statement.

To continue to imagine that India is a pawn on a chessboard that could be played by whims and fancies is a big blunder. The Prime Minister, Mr. Narendra Modi, a unique personality as a global leader, is not easy to arm-twist. Any decision that would destroy millions of agricultural and livestock farmers – unacceptable. The whole nation, including the opposition, stands behind the Prime Minister of India. It is becoming extremely difficult for the West and the Americans to change their attitude toward India too suddenly. India, by nature, is supposed to be non-violent, weak, diplomatic, and generally accepting the commands of the West. The new India, on the other hand, is dominating and refusing to to the unreasonable and unjustifiable demands anymore.

The independent rising India is causing a lot of upheaval among the countries that are being overtaken dramatically. The geopolitics is not ready to acknowledge the rising India. India is unstoppable, and the sooner this reality is understood by the rest, it would be better for them. Thanks to the targeted attitude of the USA and the West, this has enabled India, China, and Russia to form a new alliance.

The poultry farming, to be soon classified with agricultural status, is a welcome sign, and a few states have accepted this. The sooner the rest of the country adopts this policy, it will be for the farming community.

The Associations and Federations have a charter of the cause and focus on welfare and social service activities. The recent observations in such associations are that the office bearers are based on favouritism and a dynastic approach. The editor does not wish to target any particular association or federation but simply mirror and reflect the public opinion. In this regard, every association and federation should focus on reaching consensus on appointing genuine workers, contributors, and purely on merit rather than having their self-interest prevail over such social organisations.

The Indian citizen, by courtesy of available digital media, has immensely benefited and matured in awareness of information. The common man understands the fake from the genuine news. Many of the bought-out media are now exposed. The people can decide the truth from the false; this is a great step forward for the largest democracy in the world. Several countries in the world, including Pakistan, are the victims of the controlled and manipulated media.

Editor

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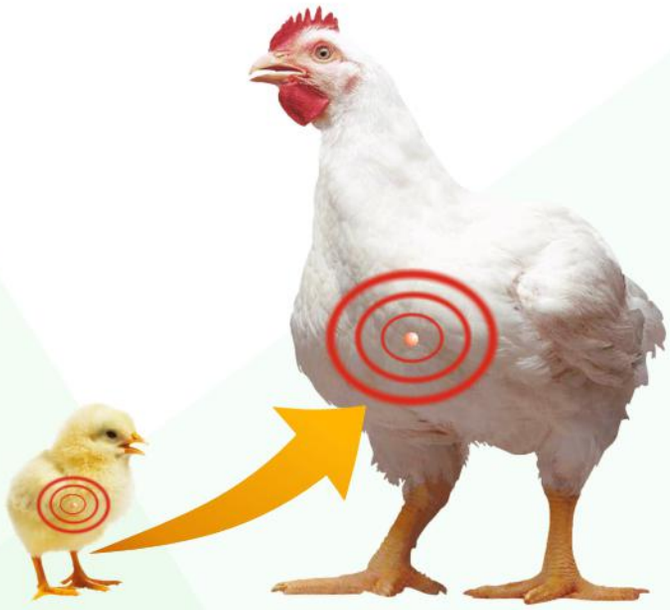

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Legend SERIES 19

Dr. D.K. Dey
Executive Director
Immeureka Animal Health Pvt. Ltd.
immeureka

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एनकाउंटर न0 266- लैब से टेस्ट कराने के बाद भी जो आमतौर से सटीक होती है परन्तु अक्सर मृत्यु दर कम होने का नाम क्यों नहीं लेती ?

यह प्रश्न बड़ा आम है अधिकाँश देखा जाता है कि लैब ने बिलकुल सही जांच की, ट्रीटमेंट भी बिल्कुल सही लिखा, परन्तु जिस फायदे की उम्मीद थी वह नहीं होता। ऐसा क्यों होता है ? यह प्रश्न बार–बार मस्तिष्क को झकझोरता रहता था। बहुत सी नई और पुरानी रिपोर्ट का अध्ययन करने के बाद फील्ड में लम्बे अरसे तक काम करने के बाद जो निष्कर्ष निकला, वह प्रस्तुत है। सम्भवता इसे पढ़ने के बाद स्वयं आप अपना निष्कर्ष निकाल सकते है, विशेष रूप से हमारे नौजवान साथी जो पोल्ट्री फील्ड से जुड़े हुए हैं। पहले कुछ घटनाओं या एनकाउंटर के बारे में बात करता हूँ फिर निष्कर्ष की करेंगे।

सन् 60 के दशक में जब लैब के नाम पर मुख्यतः IVRI था जहां पोल्ट्री फार्मर का पहुंचना मुश्किल था। अधिकाँश फील्ड डायगनोसिस होता था। एक ब्रिगेडियर साहब के यहाँ रानीशेवर से ब्रायलर चिक्स गए। पहले दिन सब ठीक था, दूसरे दिन दोपहर बाद 30–35 ब्रायलर चिक्स मर गए। किसी डॉक्टर ने चेक किया और कहा भयोक सैक (OMPHILITIS) है जो हैचरी से आई है। पोल्ट्री फार्मूला ऐंटीजर्म लिख दिया। ब्रिगेडियर साहब ने सुबह–सुबह रानीशेवर के चेयरमैन जनरल नेहरा को फोन कर यह बात बताई। जनरल साहब इस तरह की चीजों को बड़ी गंभीरता से लेते थे। उन्होंने मुझसे कहा कि फौरन ब्रिगेडियर के फार्म पर जाकर चेक करो और रिपोर्ट दो। स्वयं वह हैचरी चेक करने चले गए।

ब्रिगेडियर साहब बहुत शांत और सरल स्वभाव के थे। मुझे लेकर शेड में गए। पोस्टमॉर्टम हुआ। योक बिल्कुल नॉर्मल था जो आमतौर से 2–3 दिन के बच्चों में मिलता है। मैंने उनसे कहा भयदि इसका रंग बदल जाए, इसमें तरल बन जाए या इसे पंचर करके सूंघने से बदबू आये तो आप इसे OMPHILITIS कह सकते है यहाँ तो कुछ भी ऐसा नहीं है। योक बिल्कुल नॉर्मल है। सब कुछ चेक करने के बाद जब श्गीजर्डश खोला तो उसमे कुछ हरे–नीले रंग के क्रिस्टल मिले। मैंने पूछा भयह क्या है, जो अधिकाँश गीजर्ड में है। ब्रिगेडियर साहब ने कहा भयह फीड के साथ आया होगा। हम शेड के अंदर गए तो काफी अच्छा मैनेजमेंट था, टेम्प्रेचर सही था। अंदर की दीवारें नई सफेदी से चमक रही थी। यहाँ साफ सफाई का भी ध्यान था। इस सफेदी में कहीं–कहीं नीले रंग के पार्टिकल चमक रहे थे। एक कागज पर उन्हें खुरच के निकाला। स्टाफ से पूछा भक्या तुमने ''नीला थोथा'' सफेदी में मिलाया था? उसने ''हाँ'' किया। मैंने कहा कि ''इसे पहले पानी में घोल लेते हैं, उसमे थोड़ा सिरका मिला देते हैं, जिससे वह पूरा घुल जाता है–इसके बावजूद उसे कपडे से छान कर मिलाते हैं''। ब्रिगेडियर साहब ने देखा कि कुछ चिक्स दिवार पर चोंच मार रहे हैं। वह समझ गए कि मोर्टेलिटी का क्या कारण है? मैंने समझाया इसे कम–से–कम 2–3 फुट ऊंचाई तक बोरी के परदे से कवर कर दें ताकि चिक्स इसे ना खा सके। सारी दवाएं बंद कर दें। सिर्फ गुड़ का पानी पिला सकते हैं। उन्होंने ऐसा ही किया, दूसरे दिन भी चिक्स मरे परन्तु तीसरे दिन से लगभग मोर्टेलिटी समाप्त हो गयी।

जब मैं ऑफिस पहुंचा तो जनरल साहब हैचरी स्टाफ को लेकर मीटिंग कर रहे थे और उनकी श्लेफ्ट एंड राइटश कर रहे थे। मेरे अंदर पहुंचने के साथ ही ब्रिगेडियर साहब का फोन आया और 'सॉरी' के साथ कहा ''गलती हमारी ही थी।''

सन् 70 दशक के प्रारम्भ की बात है। एक नए लेयर फार्म पर 15,000 ग्रोवर में नया दाना आने के तीसरे दिन से मोर्तिलिटी होने लगी। उस समय भी IVRI – इज्जतनगर के सिवाए कोई लैब नहीं थी। किसी डॉक्टर को उन्होंने बुला लिया। उस समय 'डॉक्टरों' की बहुत कमी थी। डॉक्टर ने दवाओं की लम्बी–चौड़ी लिस्ट दे दी। COXY की भी दवा शामिल थी। मोर्टेलिटी भड़क उठी। शाम को फार्मर का फोन आया कि ''अभी आ जाइये''। गुडगाँव से 20 किलोमीटर की दूरी पर फार्म था। जाना पड़ा। रात के 8 बजे पहुंचे। पहले शेड देखा सुस्त (MORBIDITY) काफी थी। पोस्टमॉर्टम हुआ। COXY तो नहीं मिली। रात और दिन के पोस्टमॉर्टम में तो फरक होता ही है, किसी एक समस्या पर उंगली नहीं रख पा रहे थे। दोबारा शेड में लाइट्स जलवा कर फीडर्स हिलवाये। फ्लॉक दौड़ा परन्तु एक–दो बार मुँह मारने के बाद पीछे हट गया। स्टोर में गए, दरवाजा खुलते ही एक अजीब सी महक आई। बाहर के मुकाबले स्टोर का तापमान अधिक लगा। बोरी खोली गयी। गहराई तक हाथ डाला–अंदर काफी तापमान था। अंडा रख देते तो कुछ देर में 'हाफ बॉयल' हो जाता। कई बोरी में हाथ डाला लगभग सभी का यही हाल था। समस्या मिल चुकी थी जो इन जूट की बोरियों में बंद थी। नयी मक्का आ चुकी थी। उस समय के फीड मिलर मक्का में नमी की परवाह नहीं करते थे–बस सस्ता देखते थे। इन बोरियों में नमी 14-15% से ऊपर ही रही होगी। एक बोरी को उलटवाया तो फीड मैश के डले और नीचे जमी हुई फीड भी थी।

कारण मिल गया था तुरंत पूरे शेड के फीडर खाली करवाने का सुझाव दिया। साथ ही कहा सुबह जल्दी कहीं से गेहूं या चावल की किनकी लगवा दें। फीड मिलर से कहिये कि सुबह जल्दी दूसरी फीड बनवाकर भेजे। जिसमे मक्का सही ढंग से सूखी डालें। साथ में उन्हें सुझाव दिया कि दो–तीन घंटे के लिए कॉपर सल्फेट एवं सिरके का पानी दें। इसके बाद 3–4 घंटे कैल्शियम का पानी और शाम को बी–कॉम्प्लेक्स और साथ में विटामिन AD_3EC का पानी दें। इसका लाभ उन्हें दूसरे दिन से ही मिलने लगा और जल्दी ही सब कुछ नॉर्मल हो गया।

जब हरियाणा पंजाब से अलग हो कर एक नया सूबा बना तो बहुत जल्दी हिसार में एग्रीकल्चर यूनिवर्सिटी बनाई गयी। यह बात लगभग 1966–1967 की होगी। अगर मैं गलत नहीं तो इसके प्रथम वाईस चांसलर श्री फ्लेचर IAS बनाये गए। यह बहुत जबर्दस्त एडमिनिस्ट्रेटर एवं कर्मठ व्यक्तित्व के थे। उन्होंने 3–4 शहरों में कृषि ज्ञान केंद्र का निर्माण करवाया जिसमे एक गुडगाँव भी था। बड़ी भव्य इमारत बनी जिसमे एनिमल हस्बेंड्री में मुख्या काम पोल्ट्री पर होता रहता था। इसके डॉक्टर साहब बहुत जल्दी प्रसिद्ध हो गए थे। अच्छी लैब भी थी परन्तु इसका उपयोग शायद ही उन्होंने किया, जबकि लैब टेक्नीशियन भी मिला हुआ था। जरा यहां की भी रिपोर्ट देख लें। सन् 1970 के दशक की बात है। 10,000 रानीशेवर के लेयर चिक्स दोपहर में 'सरदार जी' के फार्म पर पहुंचे। जनवरी का महीना था–ठण्ड बहुत थी। दूसरे दिन सुबह–सुबह 100 से अधिक चिक्स मरे मिले। यह दिल्ली छतरपुर के फार्मर थे। छतरपुर में तीन फीड फैक्ट्री पास–पास थी। जहाँ सुबह से शाम किसानों और दवा कंपनियों के स्टाफ का मेला लगा होता था। सरदार जी ने स्वर्गीय सतीश जी से बात की जिनसे वह फीड लेते थे। इन्ही से रानीशेवर भी फीड लेता था। सतीश जी ने अपनी कार दी और कहा कि कृषि विज्ञानं केंद्र जाकर चेक करवा लो। वह 40–50 बच्चे लेकर वहां पहुंच गए। डॉक्टर साहब ने P.M. किया और पूछा ''किस हैचरी के चिक्स हैं?'' जवाब था ''रानीशेवर''। डॉक्टर साहब ने तुरंत कहा ''इनकी अम्मा का इलाज करवाओ''। इसका मतलब था यह बीमारी पेरेंट से आ रही है– ''फाउल टायफाइड''। कुछ दवा लिख दी। सरदार जी वापिस फैक्ट्री पहुंचे, वहां रानीशेवर का फील्ड स्टाफ बैठा था उसपर बरस पड़े। बात संगीन थी। सतीश जी ने अपने पड़ोसी के स्टाफ को बुलाया और सरदार जी से कहा 20–25 बच्चे इसे दे दो।

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

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साथ में यह भी कहा कि हैचरी पूछे तो रानीशेवर की जगह X हैचरी का नाम लेना। यही हुआ उन्होंने X हैचरी का नाम लिया। उन्होंने तुरंत उसको डांटना शुरू किया और कहा "चिक्स पालना नहीं आता तो बच्चे क्यों डालते हो? इसे ठण्ड से तुमने मारा है। टैम्प्रेचर ठीक करो"। अब देखिये वही चिक्स जिसमे उन्होंने पहले माँ का इलाज बताया था अब हैचरी का नाम बदलते ही बीमारी खत्म हो गयी और बात ठण्ड पर आ गयी। हैचरी X उन्हें हर महीने बंद लिफाफा भेजती थी। यह खबर बहुतों को थी। अब आप बताइये किस पर भरोसा करें ? अब जो उन्होंने बताया वही सही था।

सन् 1980 के दशक से लगभग सभी एग्री यूनिवर्सिटी में लैब का बंदोबस्त किया गया। यही नहीं इसके बाद वेंकटेश्वरा ग्रुप ने लगभग सभी पोल्ट्री के महत्वपूर्ण बेल्ट में पोल्ट्री लैब खोलना शुरू कर दिया। यह लैब छोटे–बड़े सभी फार्मर के पहुंच के भीतर है। इंडोवेक्स ने भी एक बड़ी लैब गुडगाँव में खोल दी, जहां टेस्टिंग के लिए सेम्पल पूरे देश से आते हैं। इसके अतिरिक्त बहुत सी लैब जगह–जगह यंग डॉक्टर ने या रिटायर्ड डॉक्टर ने भी खोल दी। सभी अपनी–अपनी प्रतिभा और तजुर्बे के अनुसार सही काम कर रहे हैं। इन सबके बावजूद प्रारम्भ में किये गए प्रश्न का उत्तर नहीं मिल पा रहा है। प्रश्न दोहरा देता हूँ – "सही डायगनोसिस और सही उपचार के बावजूद अपेक्षा अनुसार रिजल्ट पूरा नहीं मिल रहा है –क्यों?"

58 साल बाद 2023 में मैं गुडगाँव से फैजाबाद–अयोध्या शिफ्ट हो गया। अभी 3–4 दिन ही हुए थे, बाराबंकी से इंटीग्रेटर का फोन आया कि मेरी कुछ यूनिट में समस्या चल रही है विजिट कर लें। मैंने कहा "आप बर्ड्स यहीं भेज दें"। उनका फील्ड स्टाफ बर्ड्स लेकर तीन घंटे में आ गया। बर्ड्स देखे, पहले पंजा देखा। साफ जाहिर हो रहा था कि लीटर बहुत गीला है। अब चमड़ा हटाया – साफ था कि ब्रायलर गर्मी से मर रहे थे। इनका वजन लगभग 14–1500 ग्राम था। जब P.M. किया तो लगभग सभी ऑर्गन नॉर्मल थे परन्तु गर्मी का आभास यहाँ भी था। मैंने दाने की थैली खोली उसमे काफी दाना था अर्थात मरने से पहले वह तंदरुस्त था और दाना खाने के बाद मरा है। यह बात जब मैंने कहा तो स्टाफ कहने लगा "शायद दाने में गड़बड़ है, हम दाना बदलने की सोच रहे हैं"। हाथ धोया और उनसे कुछ सवाल किया। उनके जवाब से ही पता चल गया गलती कहाँ है। रिपोर्ट बुक लाया था, सुबह की मोर्टेलिटी कम और शाम की ज्यादा थी। मैंने उन्हें समझाया "जाते ही लीटर ठीक करो और ज्यादा गीला है तो बदल दो। दाना उतना ही लगाओ जो सुबह 10 बजे तक खा ले और फीडर को ऊँचा टांग दें। शाम को 4.30–5.00 बजे फीडर नीचे कर दें और दाना लगा दें। रात को सोने से पहले फीडर को दो–तीन बार हिला दें। एडजस्ट फीडर में ऐसा करें कि दाना अपने–आप जरूरत के हिसाब से निकलता रहे। सुबह 9–10 से शाम 4 बजे तक के पानी में कोई अच्छा इलेक्ट्रोलाइट या हिम–C लगा दें"। यह सुनकर वह स्टाफ चौंका "बरसात में इलेक्ट्रोलाइट?" मैंने कहा "यह मौसम कभी खुशी–कभी गम का है, इसलिए लगाते रहो।" मैंने उन्हें एक बात और समझाई – "गर्मी में भले ही तापमान 42–45 डिग्री सेल्सियस हो परन्तु सूखी हवा के कारण जो भी आप कूलिंग योजनाबद्ध ढंग से करते हैं उसका आपको पूरा लाभ मिलता है। यहाँ सितम्बर के महीने में जबकि हवा में नमि (आर्द्रता) या ह्यूमिडिटी बहुत बढ़ जाती है–लगभग 75–85% तक। इस कारण तापमान भले ही घटकर 35 डिग्री सेल्सियस हो गया हो – इसका असर फ्लॉक पर 50–55 डिग्री सेल्सियस से अधिक पड़ेगा। जैसे–जैसे आर्द्रता बढ़ेगी वैसे–वैसे तापमान का असर बढ़ता जायेगा। इसके लिए नेचुरल हवा का आवा–गमन बढ़ाना पड़ेगा और बिजली के पंखों का उपयोग करना होगा"। मैंने यह भी कहा "फीड में कोई गड़बड़ी नहीं है, सिर्फ आपका बरसात का मैनेजमेंट ठीक नहीं है"। चलते समय उसने एक लखनऊ लैब का परचा दिखाया जो 5–6 दिन पहले का था। डॉक्टर की फाइंडिंग बिल्कुल सही – इलेक्ट्रोलाइट और विटामिन्स लिखे थे परन्तु बरसात के मैनेजमेंट पर कोई टिपण्णी नहीं थी। हो भी नहीं सकती वह लैब में बर्ड्स देखकर उपचार कर रहा था। फार्म मैनेजमेंट तो चेक नहीं कर रहा था।

बहरहाल दो दिन बाद फीड मिलर का फोन आया शुक्रिया अदा किया और कहा "कि मैनेजमेंट ठीक होते ही काफी फायदा हुआ और जो इल्जाम मेरी फीड मिल पर लग रहे थे, उससे फीड 'बरी' हो गयी।" मैंने कहा "इसमें शुक्रिया की कोई बात नहीं, मैंने जो देखा वही बताया। वैसे मैं कभी भी फीड या चिक्स किसका है, नहीं पूछता।"

इसी प्रकार एक ग्रोअर्स फार्म पर 10000 ग्रोअर्स में लगातार मोर्टिलिटी हो रही थी। फ्लॉक 9–10 हफ्ते का था। लैब से चेक करवाया COXY निकली। डॉक्टर ने एम्प्रोलियम लिखा। 4–5 दिन देने के बावजूद मोर्टिलिटी कुछ न कुछ बढ़ती रही जबकि पहले हफ्ते रफ्तार जरूर ज्यादा थी। हताश होकर फार्मर ने फोन किया। जाकर पहले पोस्टमॉर्टम किया, लैब की फाइंडिंग सही थी। एम्प्रोलियम का पैकेट मंगवा कर चेक किया– देखना था कहीं एक्सपायर तो नहीं हो गया? फ्रेश था। अब शेड में गए। उस समय ग्रोअर में लम्बे फीडर लगाए जाते थे। फीडर अधिकाँश फीड से भरे हुए थे। बहुत कम ग्रोअर फीड पर मुँह मार रहे थे, फिर हट जाते थे। मैंने एक बाल्टी नया फीड मंगवाया। बाल्टी की आवाज से ही बच्चे दौड़ पड़े। फीड लगाते ही सब टूट पड़े, परन्तु 5–10 मिनट बाद सब हटने लगे। 2–3 फीड बाहर मंगवाया। खाली करवाया – नीचे काफी फीड जम चुकी थी। रंग भी कुछ बदल गया था और कुछ अजीब 'कड़वी' महक आ रही थी। मैंने कहा "समस्या यहाँ से है। एक पेन के सारे फीडर खाली और साफ करवाकर, उसमे फ्रेश फीड लगवाया। बच्चे टूट पड़े और ऐसे खा रहे थे जैसे कई दिनों के भूखे हों।"

मैंने समझाया कि तुरंत सारे पेन के फीडर खाली करवाकर, साफ करवाकर तुरंत फीड लगवा दें। आगे से ध्यान रखें हर दिन फीडर एक बार जरूर ग्रोअर दाना खाकर पूरा फीडर साफ कर दें और खाली होने के एक घंटे बाद ताजा फीड लगाएं। यहाँ फीड के ऊपर फीड लगाते जा रहे थे, जिससे नीचे फीड खराब होना शुरू हो गयी और समस्या का कारण बनी। वैसे आमतौर से ग्रोअर के साथ सौतेला व्यवहार ही होता है। यह बहुत बड़ी लापरवाही थी। ऐसे बहुत से उदाहरण है जहां लैब ने बिलकुल सही डायगनोसिस किया परन्तु उसका लाभ नहीं मिला।

कारण स्पष्ट है जब तक लैब की फाइंडिंग और फ्लॉक मैनेजमेंट, फीड क्वालिटी एवं खपत, पानी की गुणवत्ता, लीटर कंडीशन, वेंटिलेशन, वैक्सीनेशन प्रोग्राम, बॉडी वेट, प्रकाश का प्रोग्राम की पूरी जानकारी के साथ तालमेल ना हो तब तक पूर्ण सफलता नहीं मिल सकती।

इसके लिए लैब को आवश्यकता अनुसार प्रश्नावली बनानी होगी जिसे किसान को सच–सच बताना होगा। इसी से लैब की फाइंडिंग का पूरा लाभ मिलेगा अन्यथा "हम अँधेरे में बटेर पकड़ते रहेंगे।"

दुर्भाग्य कहें या सौभाग्य कहें मुझे ऐसे बहुत से छोटे बड़े एनकाउंटर इन 60 सालों में मिले हैं जिनपर यदि लिखा जाए तो पूरी पुस्तक बन जाए। अधिकाँश में लैब फाइंडिंग सही थी परन्तु मैनेजमेंट के कारण वह फेल हो रहा था। दोष लैब का नहीं मैनेजमेंट का था।

Mr. Shabbir Ahmad Khan

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Poultry Federation of India Team meets

Prof. SP Singh Baghel Ji, Union Minister of State of Fisheries, Animal Husbandry and Dairying of India and other Senior Officials of Department of Animal Husbandry, Fisheries & Dairying, Government of India.

Poultry Federation of India Team, **Mr. Ranpal Dhanda, President, Mr. Sanjeev Gupta, Vice President (HQ), Mr. Ravinder Sandhu, Secretary, Mr. Ricky Thaper, Joint Secretary**, gave a representation to **Respected Prof. SP Singh Baghel Ji, Union Minister of State of Fisheries, Animal Husbandry and Dairying** and other Senior Officials of Department of Animal Husbandry, Fisheries & Dairying, Government of India including **Dr. Muthukumarasamy B, Joint Secretary –IAS (IT/NLM, Dr. SK Dutta, Joint Commissioner, Dr Lipi Sharewal, Deputy Commissioner and Dr. Gagan Garg, Deputy Commissioner, Department of Fisheries, Animal Husbandry & Dairying, Government of India**, to discuss the present crisis in poultry industry.

While discussions with Minister Sir, it was stressed that Government must grant 'Agricultural' status to poultry & livestock farming and ensure proper feed supplies & robust vaccination program for disease prevention amongst poultry. This first of its kind initiative by a Maharashtra state government aims to empower farmers by enabling access to subsidised agricultural electricity tariffs, tax relief, loans at concessional rates and subsidies on renewable energy infrastructure such as solar equipment. The Ministry of Fisheries, Animal Husbandry & Dairying must initiate similar policy at the national level, thereby formally bringing livestock and poultry farming under the ambit of 'agriculture' sector. Such recognition would lead to benefits for millions of livestock farmers across states and would help in creating parity amongst the population associated with agricultural and poultry & livestock based farming practices.

It was also requested that there is an urgent need for a robust well-coordinated national vaccination and disease-monitoring program. Timely availability of vaccines, along with mass awareness and preventive action, is essential to safeguard bird health and protect farmers from huge economic losses. High market prices of maize (corn) & soybean meal, a key ingredient in the poultry feed, have adversely affected the cost of production of broilers and eggs. The government must initiate steps such as relaxation in import duties to provide support to feed industry, or enhanced domestic production incentives to stabilize feed prices and protect poultry farmer earning margins. The poultry sector, which is growing annually at around 7% to 8%, has a critical role in enhancing rural incomes, nutritional security and employment generation, especially for small farmers. The government must initiate urgent steps to protect farmers associated with poultry, dairy & aqua farming so that it remains a remunerative livelihood option.

During discussions, it was suggested that State Government should consult poultry stake holders to identify festivals and locations requiring restrictions. Also State Government should publish annual state-specific, location based non-sale day calendars at least three months in advance. During the discussions, it was suggested that there should be proper framework -location/ specific meat sale calendar and instead of prohibiting meat sales across entire districts or states, restrictions should be limited to the exact zones where religious observances occur. As poultry industry is the livelihood of millions engaged in poultry, livestock and allied sectors so such support from Center and State should help to minimise distress sales. This should be urgently looked into it to protect the livelihood of poultry farmers and will prevent loss of employment in rural and urban supply chains.

PFI Team appreciated the assurance given by Prof. SP Singh Baghel Ji, Union Minister of State of Fisheries, Animal Husbandry and Dairying of India for the best possible cooperation from Animal Husbandry Department officials**. PFI Team extended the invitation to Minister Sir and Government officials to attend Poultry Federation of India's 36th AGM being organised at Hotel Ramada, Lucknow (UP) from October 08-09, 2025 to which they gracefully accepted.**

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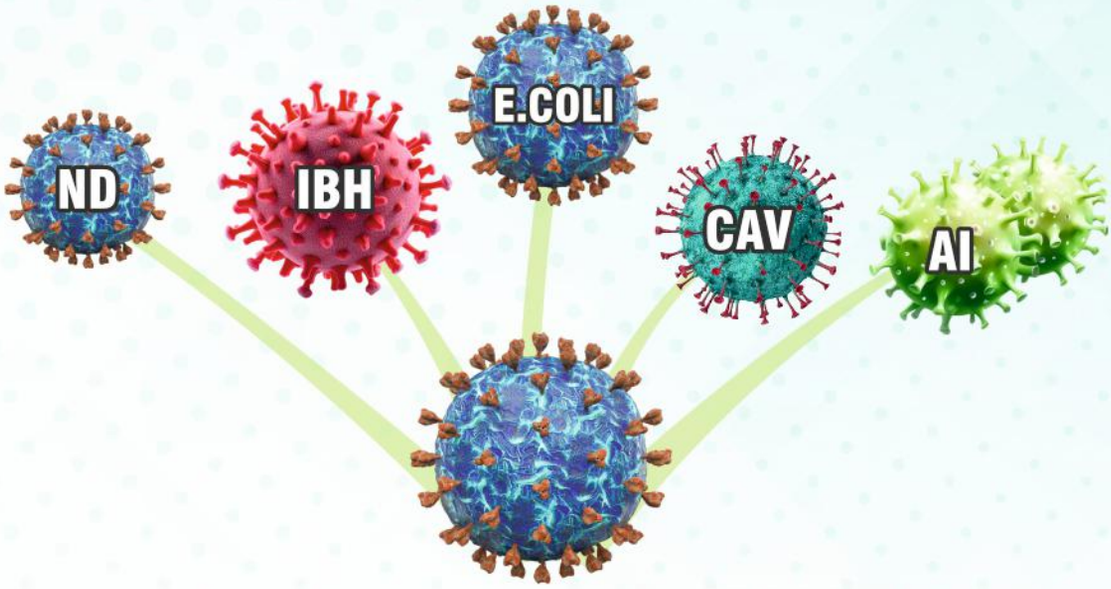

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Importance of Serology in Poultry Health and Disease Diagnosis

Dr. R.N. Sreenivas Gowda

Serologic testing is an important tool used in the commercial poultry industry for diagnosis of disease and monitoring of flock health. Therefore, serology plays a crucial role in poultry health and disease management by enabling the detection and monitoring of immune responses to pathogens. It helps identify past infections, assess vaccination effectiveness, and track disease outbreaks. This information is vital for implementing effective disease control strategies and improving overall flock health.

What is Serology?

Serology is the study of blood serum (the clear fluid that separates when blood clots). Immunology and serology laboratories focus on the following: Identifying antibodies. These are proteins made by a type of white blood cell in response to a foreign substance (antigen) in the body. They measure the levels of different antibodies in the body. They help to determine illnesses, infections, and overall health.

Flock monitoring and diagnostic serology:

A distinction must be made between serologic testing for diagnostics and serologic testing for flock monitoring. Diagnostic serology attempts to relate a disease condition to rising antibody titers. Serology for flock monitoring is performed to evaluate a poultry health program. Diagnostic serology and monitoring serology are similar in that the results of both are expressed as antibody titers and the titers are determined by identical laboratory techniques.

The importance of serology in poultry:

1. **Disease Diagnosis:**

- Serological tests, such as ELISA, can detect specific antibodies in a bird's blood, indicating exposure to a particular pathogen.
- This helps in diagnosing diseases like avian influenza, Newcastle disease, infectious bursal disease, and many others.
- By identifying the presence of antibodies, veterinarians can determine if a bird has been previously infected or vaccinated, which is crucial for making informed decisions about treatment and control.

2. **Monitoring Vaccination Programs:**

- Serology helps evaluate the success of vaccination programs by measuring antibody levels in vaccinated birds.
- If antibody levels are low, it may indicate a need to adjust the vaccination protocol or consider alternative vaccines.
- Monitoring vaccination effectiveness is essential for maintaining herd immunity and preventing disease outbreaks.

3. **Disease Surveillance:**

- Serological surveys can track the prevalence of specific pathogens within a poultry population.
- This information helps in identifying high-risk areas, monitoring disease trends, and implementing targeted control measures.
- By analyzing serological data over time, it's possible to detect emerging diseases or changes in pathogen characteristics.

4. **Improving Flock Health and Productivity:**

- Early detection and diagnosis of diseases through serology allows for timely intervention, reducing mortality and morbidity.
- Effective disease management, including vaccination and biosecurity measures, can significantly improve flock health and productivity.
- This leads to increased egg production, better weight gain, and reduced economic losses for poultry farmers.

5. **Understanding Immune Responses:**

- Serology provides insights into how birds respond to different pathogens and vaccines.
- This knowledge helps in developing more effective vaccination strategies and improving disease management protocols.
- By understanding the nuances of the avian immune system, it's possible to fine-tune disease prevention and control efforts.
- In conclusion, serology is an indispensable tool in modern poultry farming, enabling timely diagnosis, effective disease management, and ultimately, the promotion of healthy and productive flocks.

Flock monitoring allows for evaluation of the health program and indicates when changes are needed based upon fact. Flock monitoring can help you determine: 1. Effectiveness of the pullet vaccination program 2. Need for boosting of breeders/layers during the production cycle 3. Maternal antibody titer levels 4. Plan for vaccinating chicks 5. Efficacy of vaccine administration 6. Exposure to a disease to which a vaccine has not been administered.

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   c). Precipitation:- Agar Gel Precipitation (AGP) Test
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2. **Quantitative:**
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Chick Quality Control:
Assessing the Quality of Day-old Chicks at the Hatchery

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Top-quality chicks are the cornerstone of the poultry industry. The quality of day-old chicks significantly impacts growth performance and, ultimately, the final product delivered to the end-customer. For any hatchery, the main goal is to maximize the percentage of first-quality chicks. Achieving this goal requires a thorough approach to assessing chick quality. This article aims to present a practical how-to approach for providing a reliable estimate of the quality of day-old chicks.

The critical role of chick quality assessment

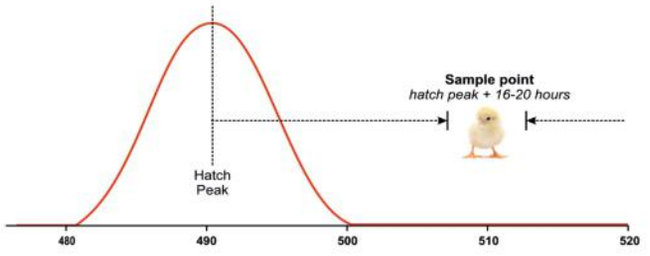
Evaluating chick quality provides **important information on the entire production process**. Chick quality is influenced by **pre-incubation, incubation and post-hatch factors**. Factors such as breeder flock health, nutrition, storage environment and transport all affect chick quality. Incubation conditions – temperature, CO_2 concentration, humidity level and the frequency and angle of turning during incubation – play vital roles in both embryo development and chick quality. Post-hatch factors like chick handling, processing, storage environment and transport also impact growth performance later in life.

That being said, it is self-evident that commercial hatcheries cannot inspect each day-old chick in detail, as it would be done scientifically. Instead, chick quality assessments should be conducted in a **practically feasible** manner, by **selecting key parameters and representative sample batches for investigation**. However, if a significant number of chicks exhibit a specific issue, further in-depth analysis should be organized.

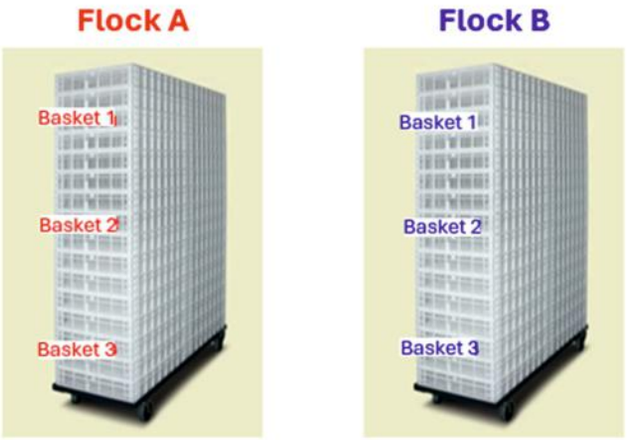
A practical approach to quality control: from parameters to sampling

According to Petersime, effective chick quality assessment in the hatchery involves **combining different key parameters**, which range from visual traits to hidden characteristics such as yolk sac residue. It is crucial to take the unique characteristics of the parameters into account and **connect their results to ensure a thorough evaluation of overall chick quality**.

Beyond selecting parameters, focusing on when and how to sample also plays a critical role. The optimal time for quality control is between **16 to 20 hours after the hatch peak**, typically in the take-off room. To ensure a representative sample, a minimum of 3 hatcher baskets per flock is used for **group chick quality assessments** – preferably the same baskets already labelled and used for egg breakouts, taken from the top, middle and bottom position. For a more **in-depth analysis of individual chicks** within the group, sampling 15 chicks from each of the 3 hatcher baskets is recommended, resulting in a total sample of 45 chicks per flock.



The most appropriate time to conduct a chick quality assessment is between 16 to 20 hours after the hatch peak.



This example demonstrates how to apply the theory in practice. For a hatcher containing 2 different flocks, baskets are selected from the following positions: the 3rd from the top, the 8th from the top and the 3rd from the bottom. This results in a total sample of 6 baskets for this hatcher.

Review of key parameters used in chick quality control

Based on Petersime's expertise, the following parameters are regarded as essential for assessing chick quality. While some parameters are more subjective than others, trained observers can assess specific characteristics or traits to provide a reliable estimate of the quality of day-old chicks.

1. First impression and vitality

Observing the general look and vitality of all chicks in the 3 sampled baskets is a fundamental and recommended practice. Day-old chicks of good quality are in general **clean, dry, lively, alert and free from deformities**. Their feather colour is uniform, and their eyes are bright and round. For a deeper insight into vitality, sampling 15 chicks per sampled basket is considered a practical approach. This can be evaluated by **gently placing a chick on its back** to check if it turns itself back within three seconds (watch video).

Chicks of premium quality must be lively and are responsive to movement.

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2. Navel and belly

Checking the navel and belly is a relatively easy and effective method for evaluating chick quality. It can give several **hints on incubation conditions**. During the final stages of incubation, many important processes occur, such as blood withdrawal from the chorioallantoic membrane and yolk sac uptake. The navel is the physical point where this vascular and yolk sac retraction occurs. Therefore, examining the navel of 15 chicks per sampled basket is a powerful tool for identifying the root causes of problems and understanding what occurred during the incubation period.

A good-quality navel is **closed, dry and free of eggshell and membrane residues**. A poor-quality navel is a potential entry point for bacteria into the most sensitive part of the body cavity, which drastically increases susceptibility to disease and the risk of post-hatch mortality. The belly must be **soft, smooth and non-bloated**.

The condition of the navel reveals much about chick quality. A badly healed navel has a protruding, large dark button or a long string of non-absorbed membrane.

3. Feathering

A newly born chick of good quality looks fluffy and has **clean and dry feathers, free from any materials such as yolk and meconium**. **Flat feathers on the head and neck** indicate either too high or too low temperatures during the last days of incubation. Examining 15 chicks per sampled basket for feather fluffiness, dryness and cleanliness is sufficient to assess the feathering quality in the group.

Chicks displaying flat feathers on their head and neck suggest temperature fluctuations during the final days of incubation.

4. Beak

The beak is vital for physical well-being, as it is used for breathing, drinking and picking up feed. It needs to be **healthy and fully formed**. The nostrils should be clean and open so the chick can breathe normally. **Crossed beaks** are often hereditary or caused by a viral infection. For each of the sampled baskets, 15 chicks can be examined specifically for the **presence of red or dark spots**. This can

indicate either that the temperature in the hatcher was too high or that the chick struggled to emerge from the eggshell due to insufficient weight loss, possibly caused by incorrect humidity conditions.

A red spot on the beak is a signal that something was wrong with the incubation conditions.

5. Legs (toes, joints and knees)

Good-quality chicks have **well-developed, hydrated legs that are free from injuries**. Good leg health is important for post-hatch performance, as it allows chicks to develop their muscles optimally, move freely, look for feed and behave naturally. Chicks with **spread legs** have posture problems because they lack sufficient strength in their legs. For each of the sampled baskets, 15 chicks can be

examined specifically for **red hocks**. This can indicate that the temperature during the incubation process was too high or weight loss was poor.

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Red hocks can have various causes but typically indicate issues with incubation conditions or hatchery procedures.

6. Chick yield - Yolk sac residue

Chick yield is calculated by dividing the average chick weight by the average fresh egg weight and multiplying the result by 100. When the incubation process is carried out properly, the chick yield at take-off typically represents **around 67-68% of the initial fresh egg weight**.

Practically speaking, the procedure involves separating all chicks from the hatch residues. Next, the total weight of chicks in each basket is measured, followed by counting the number of chicks per basket. These two figures are then used to calculate the average chick yield.

Although this is an objective measurement, the **value is relative**. This is because the total body weight is the sum of the chick weight and the remaining yolk residue weight. If a lot of yolk is left over, then less development has occurred. Hence, chick yield as a single indicator does not give a good indication of chick quality. It should be supplemented with a subsample of 15 chicks per sampled basket to have an **accurate assessment on how effectively the yolk sac was utilized**.

The yolk residue weight must be subtracted from the total body weight. An **acceptable yolk sac to body weight ratio is 10% or less**, indicating optimal environmental conditions during incubation and effective yolk utilization by the embryo. This method provides a more precise indicator of chick quality, but it is labour-intensive and involves sacrificing chicks.

Conclusion

Achieving high hatchability is crucial but ensuring the quality of the day-old chicks supplied to farms is just as important. **Farms are looking for chicks with the best growth potential**, resulting in the best outcome at the end of the rearing period. By implementing a **thorough approach to chick quality assessment**, hatcheries can enhance their percentage of premium-quality chicks, ultimately benefiting the entire poultry production chain.

In summary, here is essential guidance on chick quality control in commercial hatcheries:

- While inspecting every chick individually is not feasible, **representative sampling** offers valuable insights. Sampling 15 chicks per basket and at least 3 baskets per flock is recommended. Furthermore, performing chick quality assessments at **standardized times** – between 16 and 20 hours after the hatch peak – provides reliable data for evaluation.
- Chick quality control relies on **assessing multiple parameters**, each requiring careful consideration and correlation for a comprehensive analysis. Examine the chicks thoroughly, focusing on **vitality, navel, belly, feathers, beak, legs and chick yield**.
- Don't forget that all observations reflect what happened to the eggs and chicks **before incubation, during incubation and immediately after hatch**.

Petersime is happy to help you learn more about chick quality control and how to apply a scoring method in the hatchery. The topic is covered in the training programmes we offer. Please don't hesitate to contact us for more information.

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NOVEMBER 2025

25-27 NOVEMBER 2025 – VIV MEA

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26-27-28 NOV. 2025 POULTRY INDIA

Venue : HITEX Exhibition Center Hydrabad
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JANUARY 2026

27-29 JANUARY 2026 – INTERNATIONAL PRODUCTION & PROCESSING EXPO

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Nutritional and managemental aspects to maintain egg quality

Egg quality definition is not the same according to the different player of the egg industry, but for all of them egg quality is an important parameter which will affect incomes. Hatcheries, egg producers, egg processing plants do not give the same definition of egg quality. Important components of egg quality are egg shell quality (strength and cleanness), nutritional egg composition, egg size, vitelline membrane strength, etc. Nutritional factors are involved in most of the egg quality components and management as well. What affects egg quality is not only the feed composition but the way birds are feed.

Raju Kushwaha*, Vinod Kumar, Muneendra Kumar, Mokshata Gupta, Kajal Rajvanshi

Egg shell quality

Many nutritional factors have been reported to have an effect on eggshell quality. These factors could be sorted in two classes, direct factors which have a strong effect on eggshell quality and indirect factors which have an effect on egg size and indirectly on eggshell quality.

Nutritional factors with direct effect on eggshell quality

As laying hens get older, egg size increase. But the eggshell percentage compare to the egg size decrease. Eggs are bigger but with a lower eggshell percentage but total calcium exported through the egg increase. This leads mechanically to higher calcium requirement for older hens. Calcium deficiency will lead to weaker eggshell with a decrease of eggshell weight and eggshell strength. Calcium particle size is probably the most important parameter which affects eggshell quality. Most of calcium particle below than 2mm are found in the manure, unlike particle above 2mm which are retained in the gizzard. Calcium particle store in the gizzard will slowly solubilize, delaying the calcium assimilation. Eggshell formation takes 12 to 14 hours and occurs mainly during the night period. Most of the calcium required for eggshell formation is during the night. Bones are the calcium storage organs and more precisely medullary bone. Providing a high amount of large calcium particle size before the night will help laying hens to produce strong eggshell. Interaction with management practices is strong. According to the limestone source, solubility may be different. Calcium with a high solubility will be not store for a long time in the gizzard, cancelling the particle size effect. Phosphorus is an important nutrient for eggshell quality. Phosphorus has a strong effect on bone strength. Calcium and phosphorus are combined in the hydroxyapatite crystal, storage form of calcium and phosphorus in the bones. If calcium provide from the feed is not enough to support the calcium requirement for the eggshell formation, calcium is mobilized from the bone. But this calcium mobilization is link with a phosphorus release in the blood. A high phosphorus level in the blood inhibits the calcium mobilization from the bones. A high phosphorus intake leads to increase the phosphorus content of the blood, which inhibits the bone calcium mobilization. Then eggshell quality is depressed. Phosphorus is required for strong bones but high levels depressed eggshell quality. Vitamin D is necessary for calcium metabolism. Vitamin D deficiency leads to poor eggshell quality, mainly due to a decrease of the eggshell weight. Trace elements like zinc, copper and manganese have shown to have an effect on eggshell quality. They are influencing calcite crystal growth during the eggshell formation and influencing mechanical propriety of eggshell.

Nutritional factors with indirect effect on eggshell quality

Some nutritional factors have an indirect effect on eggshell quality. Indirect effects could be through egg size management or liver protection effect. Smaller eggs have a better eggshell strength. Diets rich in fat, in unsaturated fatty acid like linoleic acid, with high levels of protein and amino acids, push up the egg size. These factors must be considered when eggshell quality issues happened. Liver is the key organ for egg production. Egg yolk is synthesized in the liver and after transported to the follicles. But liver is also the place where the first vitamin D hydroxylation occurred. Vitamin D needs two hydroxylation's before being efficient for calcium transportation. Laying hens suffering of fatty liver produced less eggs and eggs with a bad eggshell quality. All the nutritional factors which help to protect the liver, like choline, folic acid and vitamin B 12 have also an indirect effect on eggshell quality by preventing the liver ability to convert vitamin D.

Eggshell quality and management interaction

As we have seen above, diet composition is a crucial point for obtaining good eggshell quality. But what is more important is the amount of nutrients intake and the moment when these nutrients are available for the hens. Eggshell formation occurred mainly during the night when birds are sleeping. The management key point is to use all techniques to improve calcium consumption before or during the night. Most of the feed has to be provided the afternoon and before the night to fill the crop.

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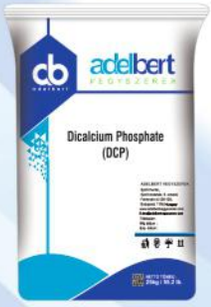

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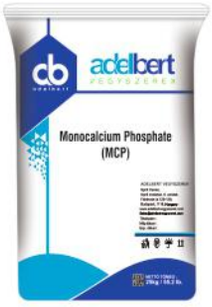

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In some country where it is allowed, midnight feeding could be very help full too. Then calcium will be slowly solubilized during the night and will minimize calcium provided from the bones, leading to good eggshell quality. Empty feeders must be obtained once a day around noon to avoid particle sorting and to promote fine particles consumption.

Cleanness of egg shell

Eggshell cleanness depends on water consumption, manure structure, manure water holding capacity and interaction between each other. Most of these parameters are linked with nutrients. Water consumption is influenced by electrolytes levels in the diet, mostly sodium, potassium and

chlorine and the balance between all of them. Other electrolytes like sulphur, magnesium, calcium could have an effect also, but a minor one. Soluble fibers, like xylan, β glucan and pectic substances, increase water consumption. These elements increase gut viscosity. For fighting against this effect, birds increase water consumption. Use of enzymes (xylanase / β glucanase) has been shown to decrease negative effect of soluble fiber by decreasing water consumption. Insoluble fibers like cellulose, hemi-cellulose, lignin, are not digested by poultry and give structure to the manure. Fibers, soluble and insoluble, give physical proprieties to excreta by influencing their water holding capacity. Raw materials contain different fiber profile and have an impact on the water holding capacity of manure. Water holding capacity and sticky proprieties of manure are linked and have an impact on dirty eggs. Other raw materials like clays have been shown to decrease dirty eggs. Clays have a high water holding capacity. According to the type of clay (bentonite / sepiolite /etc.), water holding capacity differs. Clay addition to layer diet decreases dirty eggs percentage.

Dirty eggs and management interaction

The simple management rule to respect to decrease dirty egg is: do not feed the birds during the laying period. When birds are eating, the natural behaviour is to produce droppings at the same time. Then manure makes dirty the cage bottom and increase the risk to obtained dirty eggs. Feeding birds during the laying period could lead also to dirty cloacae which could increase total amount of dirty eggs.

Egg white quality

Nutritional factors can also affect egg white quality. Egg white composition is strongly linked to the diets used. Feed vitamins concentration, and mainly water soluble vitamins, has been shown to affect vitamin egg white concentration. Riboflavin, folic acids, niacin, thiamine, pyridoxine, Pantothenic acid, biotin, vitamin B12 are well transferred into the egg white and their concentrations depend on feed concentration. Trace elements are also well transferred into the egg white. Egg white concentration of iodine, selenium and copper are linked to the levels used into the feed. Blood spots found into the egg white could have some nutritional links. Blood spots are affected by mycotoxins contamination like ochratoxin, strong choline deficiency, vitamin A and vitamin K.

Egg yolk quality

Egg yolk composition strongly reflects feed composition. Egg yolk fatty acid profile is directly linked to the fatty acid profile of diets. Diets rich in omega 3 lead to egg yolk rich in omega 3. Same observations have been made for the omega 6 fatty acids. Fatty acids found in the egg yolk are linked to the feed fatty acid profile. Feed vitamins concentration affect also egg yolk vitamin composition. Compare to the egg white, where water soluble vitamins are well transferred, for egg yolk due to its composition, it is mainly fat soluble vitamins which are transferred like vitamin A, vitamin E and vitamin D. Water soluble vitamins are also been reported to be transferred in the egg yolk: riboflavin, folic acids, niacin, thiamine, pyridoxine, pantothenic acid, biotin and vitamin B12.The proportion of these water soluble vitamins transferred in the egg yolk is higher. Feed trace elements concentration affects directly the egg yolk composition. Good transfer rates have been shown for iodine, copper and selenium. Some differences have been observed according to the trace element source; organic forms have a better transfer than inorganic forms. Many carotenoids are transferred to the egg yolk (canthaxanthine, citranaxanthine, apo carotene ester, lutein, zeaxanthine, etc.). Egg yolk concentration is directly linked with feed concentration. Transfer efficiency is not the same according to carotenoids. Carotenoids bring colour to the egg, yolk which is important for consumers, but modulate the anti-oxidant potential of the eggs too. Antioxydant concentration affects human heath and/or the embryo development.

Vitelline membrane

One important parameter for egg processing plant is the vitelline membrane strength. A strong membrane is useful to separate easily white and yolk. Weak membrane leads to important economical loses because once the membrane is broken, egg yolk is polluting the egg white. Like the egg yolk, vitelline membrane fatty acid profile depends on feed fatty acid profile. Type of fat in the feed used affects fatty acids incorporated in the vitelline membrane. Elasticity and permeability of the membrane are then affected. Saturated fatty acid increases vitelline membrane permeability. Vitamin E has been shown to increase vitelline membrane strength. Considering vitelline membrane strength, strong interactions with bird and farm management exist. Older hens have weaker vitelline membrane. Eggs must be collected as soon as they are laid and must not stay a long time on the egg belt. Storage temperature and time are also affecting vitelline membrane strength.

Egg composition and management interaction

All nutritional factors affecting egg composition, whatever the egg part, are linked to nutrients intake. Nutrients intake is the nutrient composition multiplies by feed consumption. So, feed consumption is a crucial point to control to be sure to obtain desired eggs. Focus must be done on feed distribution management. Laying hens are grain eater and have a strong preference for coarse feed particles. Feed distribution management must introduce an empty feeder period once a day, to secure fine particles consumption. The aim is to secure intake of small particles containing phosphate, vitamins, trace elements and pigments. When birds are sorting feed particles, eggs obtained are very variable in term of composition. Other factors like feeder space per hen, flock evenness, feed grist size has to be considered to obtain uniform feed consumption.

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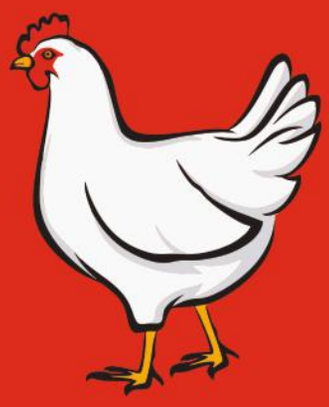

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- Vitamin - E
- Vitamin - D
- Vitamin - K

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Newcastle Disease in India: A Silent Economic Killer in Poultry – Strategies for Mitigation

Dr. Priyanka Kamble
Sr. Marketing Manager

Introduction

Newcastle Disease (ND), caused by Avian Paramyxovirus Type-1 (APMV-1), remains one of the most devastating viral infections affecting the poultry industry in India. With high mortality rates, reduced egg production, and severe economic losses, ND poses a constant threat to both small-scale poultry farmers and large commercial producers. Despite advancements in vaccination and biosecurity, the disease continues to challenge the sustainability of India's poultry sector, which contributes significantly to the nation's agricultural GDP.

Newcastle Disease: A Persistent Menace

Newcastle Disease is highly contagious, affecting chickens, turkeys, and other avian species. The virus spreads through direct contact, contaminated feed, water, equipment, and even airborne transmission. Clinical signs vary depending on the strain but commonly include:

- **Respiratory distress** (gasping, coughing, nasal discharge)
- **Nervous signs** (twisting of the neck, paralysis, tremors)
- **Greenish diarrhoea**
- **Sudden drop in egg production** (thin-shelled or shell-less eggs)
- **High mortality** (up to 100% in unvaccinated flocks) In India, **velogenic strains** (highly virulent) are predominant, causing severe outbreaks that cripple poultry operations. (APMV-1 Velogenic NDV is responsible for Velogenic Viscerotropic ND (VVND) outbreaks in India).

Economic Impact on the Indian Poultry Industry

India is the **third-largest egg producer** and **fifth-largest poultry meat producer** globally, The poultry sector in India, valued at more than **USD 28 billion in 2021-22,** has been a vital component of the country's agriculture and food processing industry. Newcastle Disease disrupts this growth through:

1. Direct Losses Due to Mortality & Culling

- **Unvaccinated or poorly managed flocks** face mortality rates of **80-100%**, leading to massive financial losses.
- Government-mandated culling during outbreaks further exacerbates losses.

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2. Reduced Egg & Meat Production

- **Layers:** A single ND outbreak can cause a **20-50% drop in egg production** & reduce egg quality, with recovery taking weeks.
- **Broilers:** Cause **severe mortality**. Infected birds suffer stunted growth, leading to lower market weights and downgrading at processing plants.

3. Increased Vaccination & Treatment Costs

- Farmers must invest in **regular vaccination schedules (Live & Inactivated ND vaccines)**, adding to operational costs.
- Secondary bacterial infections (E. coli, Mycoplasma) increase antibiotic usage, raising concerns over **antimicrobial resistance (AMR)**.

4. Trade Restrictions & Market Losses

- ND outbreaks lead to **quarantine zones,** restricting movement of poultry and products.
- Export markets (Middle East, Southeast Asia) impose bans on Indian poultry products during outbreaks, causing revenue losses.

5. Impact on Small & Marginal Farmers

- **Over 70% of Indian poultry farmers are small-scale**, lacking resources for strict biosecurity.
- A single ND outbreak can **bankrupt small farmers**, pushing them out of the industry.

Strategies to Combat Newcastle Disease

1. Strict Vaccination Protocols

2. Enhanced Biosecurity Measures

- **Farm-level hygiene:** Disinfection of footwear, vehicles, equipment.
- **Restricted access:** Prevent contact with wild birds & other farms.
- **All-in-all-out systems:** Reduce viral persistence in multi-age flocks.

3. Early Detection & Rapid Response

- **Regular serological monitoring** (HI tests for antibody titers).
- **Rapid reporting** of suspected cases to Veterinarians.

4. Proactive Measures for ND Outbreak Prevention

- **Compulsory ND vaccination programs** in high-risk zones.
- **Farmer awareness campaigns** on biosecurity best practices.

Conclusion: A Call to Action

Newcastle Disease is not just a health issue—it's an **economic catastrophe** for India's poultry industry. With the sector growing at **8-10% annually**, unchecked ND outbreaks can derail livelihoods and national food security.

The solution lies in:

- ✓ **Proactive vaccination**
- ✓ **Robust biosecurity**
- ✓ **Farmer education**
- ✓ **Stronger policy enforcement**

As veterinarians, researchers, and industry leaders, we must unite to **safeguard Indian poultry from Newcastle Disease**—ensuring sustainability for farmers and safe, affordable protein for millions.

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Bangladesh poultry dilemma:

Multinational companies control poultry industry while small farmers struggle

Multinational companies are increasingly dominating the poultry sector in Bangladesh, while smaller farms find it challenging to remain viable in the market, according to industry insiders.

Foreign companies are buying or taking lease of the farms that were shut down following the outbreak of bird flu. Some of them are using the licences of closed farms, they said.

A large number of local skilled farmers are now jobless, they added.

Already, around 27 % of the total share of poultry farms is being captured by the multinational companies, said Bangladesh Poultry Industries Association (BPIA) Joint Secretary General Khandokar Mohsin.

Mohsin also feared that if the situation continues unabated, nearly 50% share will go to the foreign hands within three to four years.

Seguna, Tata, Godrej from India, New Hope from China and Charoen Pokphand (CP) Group of Thailand are doing poultry business with CP being the largest supplier of broiler chickens and eggs in the country.

Nearly 47% of the poultry farms were closed during the last one and a half years due to spread of the avian influenza virus.

The number of farms has been reduced to 60,824 from 114,763 during the period, according to a study by Bangladesh Poultry Khamar Rakkha Jatiya Parishad in July.

Losing poultry producers have no ability to restart the business because of financial crisis, said Kazi Farms chairman and former President of Bangladesh Breeders Association Kazi Jahidul Hasan.

The government is not taking proper measures to rescue the industry from ruination but allowing import and business of the multinational companies.

The country's largest farm owner also said that following the involvement of foreign traders the local breeding farms are at a great risk now.

He said small poultry farmers are usually buying baby chicks from the local breeders but the alien farm owners are not collecting those products from the local traders. "They purchase the poultry products from big foreign farms".

There are more than 100 breeding farms in the country now and if the situation continues, the number will be reduced to 10 or 15 in coming days, said the experienced farm owner.

He said the capacity of local poultry farms had been enough to fulfil the requirement of country's chicken-based protein. "In absence of government's responsive policy for the industry, we are now depending on import," he lamented.

He said the present poultry import policy will fully smash the once income generating sector of the village people. "The authorities are not giving necessary financial support and compensation to the closed farms to restart their business but promoting import of the products".

The authority should introduce a poultry friendly policy and at the same time they should not allow the multinational companies to do business, he said.

He also stressed the need for introducing vaccine to eradicate bird flu from the country. The BPIA Joint Secretary General said Bangladesh is one of the five critical bird flu-affected countries in the world, which is yet to introduce vaccine to prevent the disease.

But other most risky countries like India, Vietnam, China and Egypt have introduced vaccines to prevent the disease, he added.

"The government needs to help the affected farms with compensation and vaccines in an effort to prevent avian influenza from causing heavy damage to the key industry," he added.

The poultry producers claimed that the livestock department is rather helping the disease to linger to achieve their vested interest.

They claimed that for getting grants from the donors, the authority is not taking proper steps to prevent the virus and hiding the exact number of culling in the poultry farms for not giving compensation to the closed farms.

Bahanur Rahman, Professor, Department of Microbiology and Hygiene of Bangladesh Agriculture University, said to prevent the disease, the authority should introduce vaccine immediately.

They can, at least experimentally, start the vaccination of the poultry birds, he stressed.

"We have the ability to develop the vaccine as there are capable scientists in the country," said the microbiologist adding if the government gives us proper infrastructure, we will be able to make the medicine within a short time.

"But I have no idea why the government is not giving permission to invent the vaccine," he added.

He also mentioned that they made a proposal to the government to formulate bird flu vaccine in 2007 when the disease was first detected in the country.

If the government had given permission at that time, we would have been able to develop the vaccine by this time, said Mr Rahman.

Before the Avian influenza attack in 2007, the total investment in the country's poultry sector was estimated at nearly ৳120 billion (US$ 1.75 billion) where some 3.5 million people are employed directly, the industry insiders said.

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HIPRA India Inaugurates its New Office at Balewadi, Pune

HIPRA India, a global leader in animal health with a strong focus on innovative poultry vaccines, has shifted its operations to a new office at Nandan ProBiz, Balewadi, Pune. The move marks a significant step forward in HIPRA's commitment to the Indian poultry sector and its rapidly growing customer base.

The official inauguration took place on July 7, 2025, with a ribbon-cutting ceremony attended by HIPRA leadership and eminent distributors like Mr. D.S Subramaniam , Mr. Mohan Sridevi and others . The event was followed by the company's Sales Meeting, where strategic goals and upcoming product plans in the poultry vaccine segment were discussed in detail.

Dr,. Shyam Vane , Business Manager of HIPRA India, shared during the event:

"Shifting to this new space aligns with our vision for expansion in India. Our commitment to science-based, high-quality vaccines for poultry diseases has helped us build trust amongst our beloved customers."

HIPRA's poultry vaccine portfolio, known for its innovation, safety, and efficacy, plays a key role in disease prevention and productivity enhancement across poultry farms in India. The company continues to introduce advanced technologies and services aimed at supporting veterinarians and poultry producers with preventive health solutions.

Along with the inauguration of new office. HIPRA India successfully held the sales meeting as well which served as a platform to review performance, align on growth strategies, and share updates on upcoming poultry health products. It also recognized the critical role of HIPRA's distributor network, many of whom were present at the inauguration and contributed to the ceremonial ribbon cutting.

With this move, HIPRA India is set to further expand its impact in the Indian poultry market, strengthen its support infrastructure, and deliver on its mission: "Building immunity for a healthier world."

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Continues Its Series Of Technical Seminars On The "VENGEM" LPAI (H9N2) Vaccine

Vengem Vaccine Seminars Drive Poultry Health Awareness In Karnataka

Awareness seminars on Vengem (LPAI-H9N2) inactivated vaccine were held in **Bangalore and Bagalkot** on **2nd May** and **24th June 2025**, attracting strong participation from poultry experts and industry leaders.

Dr. Prakash Reddy (DGM**)** shared impactful insights on Vengem's role in reducing losses from Low Pathogenic Avian Influenza, emphasizing the importance of preventive vaccination. Dr. N. Baburaj (DGM) further highlighted Ventri's updated vaccine range designed for effective and comprehensive disease control.

The events concluded with closing remarks from **Mr. R.D. Lokesh** (AGM), who thanked all attendees for their engagement and support.

These seminars reflect Venworld's continued commitment to advancing poultry health through science-driven solutions.

Vengem Vaccine Seminars Strengthen Poultry Health Focus In Rajasthan & Haryana

Vengem (LPAI-H9N2) vaccine awareness seminars were successfully held in **Ajmer (Rajasthan)** and **in Jind, Panipat, and Karnal (Haryana)** on **29th May, 25th,** and **26th June, 2025**. The events drew strong participation from poultry professionals and highlighted the need for effective disease control in layer farming.

Mr. Harjit Padda (DGM – Sales & Marketing) opened each session, underlining Venworld's commitment to science-led solutions. **Dr. Namdeo Bulbule** (AGM) presented key strategies for LPAI prevention, stressing the importance of timely vaccination with Vengem to protect flock health and farm profits.

Mr. Shashi Bhushan (AGM) concluded the seminars with a vote of thanks, appreciating the active involvement of attendees and the efforts of the Venworld team.

These events reinforced Vengem's trusted role in LPAI protection and deepened its connection with the poultry community

Vengem LPAI Vaccine Awareness Meet Held In Maharashtra

A Vengem (LPAI-H9N2) vaccine awareness seminar was successfully held on **13th June, 2025**, in **Yermala** (**Maharashtra**) drawing enthusiastic participation from poultry professionals and stakeholders.

Dr. H.G. Murade (DGM – Sales & Marketing) welcomed the audience and set the stage for the technical session. Dr. Namdeo Bulbule (AGM) delivered a focused presentation on effective disease control in layer farming, highlighting Vengem's role in enhancing immunity and minimizing losses from Low Pathogenic Avian Influenza (LPAI).

Mr. Ram Ghate (AGM) concluded the event with a vote of thanks, appreciating the participants' involvement and the Venworld team's efforts in organizing the seminar.

The event reaffirmed Vengem's growing trust as a dependable solution against LPAI challenges in the poultry industry.






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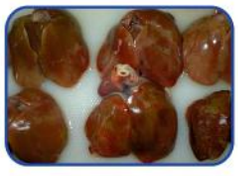
Layer Chicks : 15 to 20 ml/100 Birds
Grower : 15 to 20 ml/100 Birds
Layer : 15 to 20/100 Birds
Toxicity Control Treatment :
Double the Dose

In Breeder (5 to 7 days)
Chicks : 20 to 25 ml/100 Birds
Grower : 20 to 25 ml/100 Birds
Prelay : 20 to 25 ml/100 Birds
Layer : 20 to 25 ml/100 Birds
Toxicity Control Treatment :
Double the Dose



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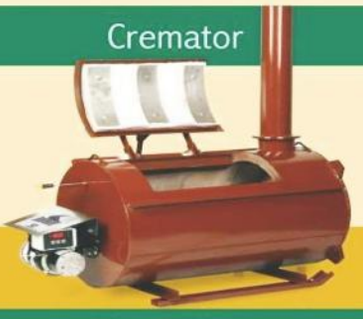

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IPEMA/Poultry India Coordinates Landmark Inauguration of Cull Bird Single Window Facility in Hyderabad

Cull Bird Single Window Facility Inaugurated in Hyderabad – A Major Step Forward for Poultry Infrastructure

The Telangana Poultry Federation (TPF), with the valuable support of **IPEMA/Poultry India**, proudly inaugurated the **Cull Bird Single Window – 5 Regions Building** at **Pedda Amberpet**, near the **Outer Ring Road (ORR)**, Hyderabad. This landmark project is a significant leap in strengthening the poultry infrastructure and operational integration across Telangana and neighboring states.

The inauguration was graced by **Malreddy Ranga Reddy**, Hon'ble MLA of Ibrahimpatnam, and **Sri Kasireddy Narayana Reddy**, Ex-ZP Chairman, Nalgonda & Ex-APPF President, who served as Chief Guests for the occasion.

Unified Infrastructure for a Growing Industry

In his keynote address, **Sri Kasarla Mohan Reddy**, President of TPF, emphasized,

"This building is more than infrastructure—it symbolizes unity, progress, and our Federation's unwavering commitment to empowering poultry farmers."

The newly launched facility is envisioned as a centralized hub to streamline **cull bird marketing**, ensure **greater transparency**, and boost **efficiency in service delivery** across five key poultry regions in the state.

IPEMA/Poultry India's Enduring Commitment

Speaking at the event, **Mr. Uday Singh Bayas**, President of IPEMA/Poultry India, stated:

"This initiative aligns with our mission for sustainable growth and marks a new chapter in poultry infrastructure development. We are proud to support efforts that foster progress, coordination, and innovation within the Indian poultry sector."

Dignitaries and National Participation

The event saw an impressive turnout of esteemed dignitaries and industry leaders, including:

- **Sri Marthineni Dharma Rao**, Ex-MLA (Warangal & Hanamkonda)
- **Sri Daley Sudhakar**, Ex-President, APFF
- **Sri Gurram Chandrashekhar Reddy**, Chairman, NECC Hyderabad Zone

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  To be used with soya, maize and oil with inclusion rate 50 kg / Ton of complete feed.
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Mr. Dhiraj Choudhry-99914-11111, Mr. Madan Choudhry - 99913-11111

National representatives from various poultry associations also lent their presence and support:

Dr. Divya Kumar Gulati	Chairman	CLFMA	Maharashtra
Mr. Ranpal Dhanda	President	Poultry Federation of India	Haryana
Dr. Jeetendra Verma	President	WVPA	Karnataka
Mr. Nawab Ali Akbar	President	UP Poultry Farmers Association	Uttar Pradesh
Mr. Shubham Balkrishna Mahalle	Vice President	Amaravati Poultry Farmers Association	Maharashtra
Mr. Raju Nambradar	National Spokesperson	Independent	Delhi
Mr. K.V. Subba Rao	President	Andhra Pradesh Poultry Federation	Andhra Pradesh
Mr. K.V. S. Subba Raju	Vice Chairman	NECC	Andhra Pradesh
Mr. M P Satish Babu	Zonal Chairman	NECC	Karnataka
Shri Praveen Nain	Sr. Vice President	Broiler Breeders Association North	Haryana
Shri Ajay Kumar	Vice Secretary	Broiler Breeders Association North	Haryana
Mr. Madan Mohan Maity	Secretary	West Bengal Poultry Federation	West Bengal

Dr. Dinesh Arora, Executive Member, WVPA.

Dr. Ajay Deshpande President, VetsIn Poultry.

Dr. K.Bala Swamy President - NECPC

Coordinated Leadership and Industry Support

The Telangana Poultry Federation leadership—including **Sri Vuppala Narasimha Reddy** (Vice President), **Sri Vuduthala Bhasker Rao** (General Secretary), **Sri Pathuri Venkat Rao** (Joint Secretary), and **Sri Vanegti Abhishek Reddy** (Treasurer)—played a pivotal role in successfully organizing the event.

Prominent industry Leaders such as and **Mr. Surender Dhull** of Skylark Hatcheries, and **Mr. KG Anand**, GM of VHL, were also in participated in this event.

A Model for the Future

Now operational, the **Cull Bird Single Window – 5 Regions Building** is expected to serve as a **model facility** for streamlined **farmer coordination**, **product movement**, and **market connectivity**—a blueprint for future infrastructure projects within the poultry sector.

IPEMA/Poultry India is proud to support forward-thinking initiatives like this, fostering unity, innovation, and long-term sustainability in India's thriving poultry ecosystem.

For more updates, stay connected with IPEMA / Poultry India
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PVS Group Strengthens Global Ties with a Heartfelt Visit to Ethiopia, Kenya & Nigeria

Building Stronger Partnerships in Animal Healthcare

PVS Group recently completed a successful business tour of **Ethiopia, Kenya, and Nigeria**, further strengthening its partnerships and deepening ties with key distributors and customers in the region.

Mr. Arun Pamulapati (Director) and **Dr. Ajit Jadhav (Head-Techno marketing)** led the visit, not just to discuss business, but to personally connect with valued partners and understand their local needs and aspirations. What started as a business trip soon became a warm and meaningful exchange of ideas, trust, and shared goals.

PVS Group is a global leader in animal healthcare, offering **innovative, high-quality veterinary products**. With a strong presence across continents, we are dedicated to improving animal lives through **research-driven solutions** and a **customer-first approach**.

The **hospitality and support** from our African partners were truly touching. Their warm welcome reflected the strong relationships we've built over the years—founded on mutual respect, transparency, and a shared vision for the future of animal healthcare.

Key Highlights of the Visit:

- Strategic discussions on our **Vision 2026**
- Plans for **upcoming innovative product launches**
- Exploring new ways to **grow together** in the animal healthcare industry
- Spotlight on PVS Group's **R&D-driven product range** that is making a global impact

During the visit, our team also met with **farmers, feed millers, and end-users**, who expressed their **happiness and satisfaction** with PVS products and services. Their positive feedback motivates us to continue delivering **high-quality, science-backed veterinary solutions**.

"This tour wasn't just about business; it was about celebrating trust and long-term partnerships," said **Mr. Arun Pamulapati, Director of PVS Group**. "Moments like these show the true spirit of PVS—partnerships with heart."

At PVS Group, we believe that relationships are the real strength of our business. The loyalty and appreciation we received in Africa reaffirm our commitment to serve with passion, integrity, and excellence.

Looking Ahead

As we move forward, such partnerships inspire us to continue our journey to become a global leader in animal healthcare—guided by science, built on trust, and driven by meaningful collaboration.

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GEH TECH-2 : ADVANCING POULTRY GUT HEALTH THROUGH SCIENCE & SYNERGY

Optima Life Sciences concluded the second edition of its seminar series, **GEH TECH-2**, on July 19, 2025, at Vedic Village Resort in Kolkata. Designed to address the growing concerns in poultry gut health, this technical symposium brought together a dynamic assembly of veterinarians, nutritionists, researchers, and poultry specialists from across the Eastern region.

With the rapid transition away from Antibiotic Growth Promoters (AGPs), this event focused on redefining strategies to build resilient gut systems in poultry—unlocking their full genetic potential through science-backed alternatives.

GEH TECH-2 was honoured by the esteemed presence of **Dr. A. B. Mandal,** former Director of the **Central Avian Research Institute**, whose contributions to poultry science continue to inspire the industry.

Mr. Vinay Kulkarni, Executive Chairman of Optima Life Sciences, opened the event with a thought-provoking presentation on **emerging trends in poultry production and the company's commitment to sustainable, antibiotic-free solutions.**

Dr. K. Jayaraman, a leading voice in animal nutrition with decades of experience in poultry science, gut physiology, and feed formulation, delivered the keynote session titled **"Gut Health Under Siege: Leveraging Biotic Synergy to Restore Gut Homeostasis."** Known for his evidence-driven research and pragmatic field insights, Dr. Jayaraman has played a pivotal role in advising integrators and feed manufacturers on sustainable gut health solutions in India and beyond.

Dr. Jayaraman traced the **evolution of poultry gut health**—noting how **shorter broiler lifecycles and extended laying periods** have made the gut

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more vulnerable to numerous threats. He emphasized the importance of addressing critical factors that compromise gut health, including: Delayed feeding of chicks, Mycotoxins in feed, Water quality and hygiene, Nature and quality of raw materials, Imbalance in intestinal microflora, Improper crude protein levels & diseases such as Coccidiosis and Necrotic Enteritis. These factors, often acting in synergy, can lead to compromised **intestinal integrity, dysbiosis**, and a steep drop in **growth performance**, especially in AGP-free systems.

The Grand Unveiling:

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The seminar also marked the much-anticipated launch of **ButyEster PRO 3**, introduced by **Dr. Kalyani Sarode**, Senior Product Manager at Optima Life Sciences.

ButyEster PRO 3, developed with advanced GEH+ Technology, is a next-generation tributyrin supplement combining high-purity tributyrin, poly-antibiotic-resistant probiotic, and synergistic prebiotics.

This innovative formula precisely delivers butyric acid, strengthens gut health, boosts mucosal immunity, reduces pathogens, and improves nutrient absorption—effectively replacing AGPs while supporting robust performance and gut recovery in poultry.

With **ButyEster PRO 3**, gut modulation becomes precise, powerful, and sustainable—replacing AGPs without compromising performance.

The resounding success of GEH TECH-2 builds upon the momentum of GEH TECH-1, establishing this platform as a hub for innovation and excellence in poultry nutrition.

As poultry challenges evolve, so must our solutions. At Optima Life Sciences, we remain committed to pioneering science-led, field-validated, and commercially viable technologies that support the full genetic potential of commercial broilers and layers—sustainably and responsibly.

We thank all participants, speakers, and partners for their contribution to GEH TECH-2's success.

Stay tuned for the next edition of the GEH TECH Seminar Series. Together, let's redefine gut health one breakthrough at a time.

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- Layer 25% Concentrates
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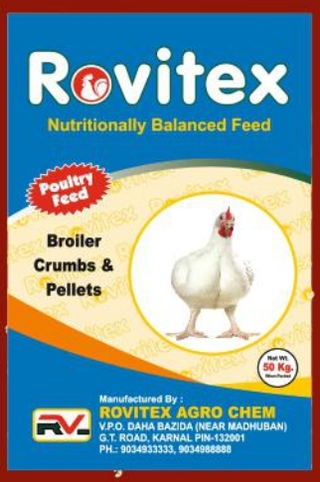

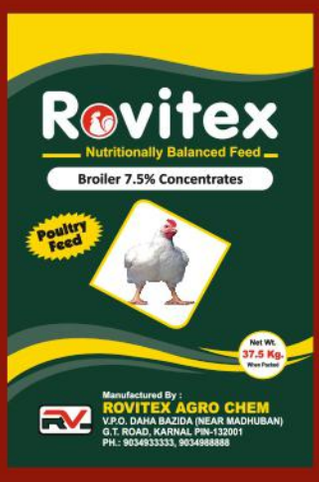

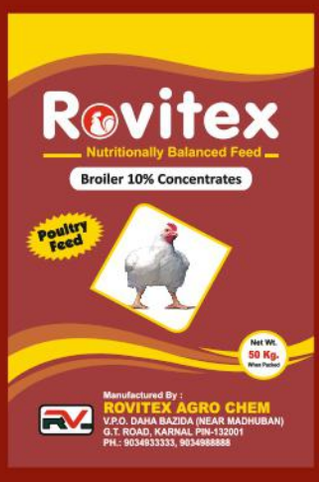

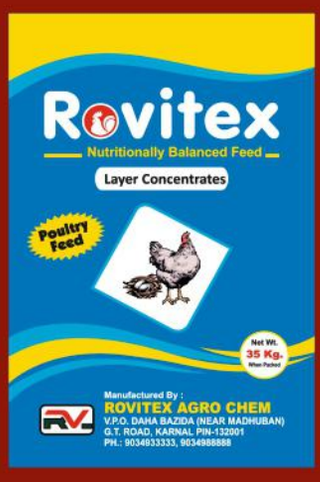

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From Learning to Leadership:

How SEC India is Building a Stronger Protein Industry

Dr. P.E. Vijay Anand
Center Lead
The Soy Excellence Center, India
U.S. Soybean Export Council

The Soy Excellence Center (SEC) India Program has been making steady strides in delivering high-impact training, fostering an active professional community, and nurturing the next generation of leaders for India's protein value chain. With a focus on quality learning, innovation, and engagement, the program continues to shape a thriving ecosystem of skilled and motivated professionals. Globally, the program has trained over 35,000 members since its inception in 2020.

Learning Without Boundaries

Through its flexible 'Self-Paced Hybrid (SPH)' courses, SEC India offers practical, industry-specific training across five professional tracks: **poultry, feed milling, aquaculture, dairy, and soy foods**. To date, these courses have empowered over 900 Indian professionals to transition into the SEC community, with ongoing refinements aimed at enhancing completion rates and the learner experience.

A Community That Connects and Grows

Completion of the SPH courses, SEC India's community activities, both virtual and in-person, serve as vital platforms for continuing knowledge exchange and networking. Virtual events explore diverse topics from poultry best practices to feed formulation, while in-person programs like advanced training sessions and the flagship "Feed Formulation Lab" offer hands-on, collaborative learning.

The program also draws on the expertise of Subject Matter Experts (SMEs) and community "Champions" from within its network, enriching discussions and building a library of valuable static resources. This dynamic approach has helped maintain strong engagement levels among members.

Recognizing and Inspiring Future Leaders

In line with its mission, SEC India celebrates excellence and contribution. Selected professionals have been honoured with certificates of appreciation at USSEC and industry events, while others have earned Gold and Silver badges recognizing their active participation and leadership potential. These recognitions not only reward dedication but also inspire others to strive for greater involvement.

Insights from Industry Leaders

Listening to the industry is central to SEC India's approach. SEC relies on its 15-member Regional Advisory Council (RAC) for advice. Engagement sessions with leaders from across the protein value chain, covering education, nutrition, technology, and entrepreneurship, have provided invaluable direction for program evolution. Such dialogues also highlight emerging talent.

Innovation and Operational Excellence

All global SECs (6 of them catering to over 40 countries) in general operate all of their learning programs on an impressive SEC Digital Platform and continually seek to improve their systems and processes. The Digital Platform serves as a massive facility for global and regional networking and is a source for a wealth of knowledge. Innovations like new communication strategies have boosted course completion rates, while a Bulk Upload registration feature has streamlined participant onboarding. Data-driven optimization reports and the JIRA Ticketing Tool have further enhanced operational efficiency and participant support. The digital platform allows SEC managers to assess data, measure programs, activities, and evaluate different aspects from a wide perspective, aiding continuous improvements in virtual programming.

Amplifying the SEC Voice

Through partnerships with leading poultry and dairy media outlets, SEC India shares stories, updates, and testimonials that reach tens of thousands in print and digital channels. A growing library of video testimonials captures the human impact of the program, motivating new participants and strengthening SEC's visibility across the industry.

In every initiative, SEC India is guided by a clear purpose: empowering professionals, connecting communities, and cultivating leaders who will champion U.S. Soy's role in a sustainable and competitive protein sector. It is gradually emerging as a great partnership mission with the entire protein value chain in India.

What SEC Members Have to Say

Prakash Kumar Chandra,
Management Trainee,
Nanda Group, Bangalore

Completing the SEC India Poultry Production and Management (Basic Certificate) Cohort #5 has been a pivotal experience in my professional journey. This course offered comprehensive insights into essential topics, including Fundamentals, Management of Hatchery, Brooding Farms, Feed & Nutrition, Production of Broiler & Layer Birds, Biosecurity, Bird Welfare & Heat Stress Mitigation. The curriculum was presented in a clear & accessible manner, making it suitable for those new to the field. I found the interactive Q&A sessions particularly beneficial, as they allowed for clarification of concepts & facilitated deeper engagement with instructors & peers.

As a result of this course, I feel significantly more equipped to navigate the complexities of poultry management & contribute effectively to the industry. I highly recommend this program to anyone seeking to enhance their knowledge & skills in poultry production. It has truly reignited my passion for the field & set a strong foundation for my future endeavors.

Next-Generation Immunomodulation for Sustainable Poultry Production: Innovations, Applications, and Global Perspectives

Dr. Pawar Rutik Namdev[1], Dr. Shipra Tiwari[1], Dr. Mohini Tripathi[1]

1. Introduction

With the continued intensification of global poultry production, the industry is increasingly confronted by critical challenges such as sustainability, biosecurity threats, antimicrobial resistance, and growing consumer demand for safe, natural products. In response, immunomodulation strategically enhancing or regulating the immune system through natural approaches has emerged as a compelling alternative to traditional methods, particularly antibiotic growth promoters (AGPs). In light of widespread AGP bans across various regions, researchers and industry stakeholders are turning to natural immunomodulators to bolster avian immune function, improve productivity, and support the long-term sustainability of poultry production systems worldwide.

2. Immunosuppression in Poultry: Advocating for Immunomodulation

In modern poultry production, birds are routinely subjected to a range of stressors including temperature extremes, overcrowding, transportation, and pathogen exposure that compromise immune function. These stress factors often lead to oxidative stress and the release of glucocorticoids, which can impair immune organs and diminish both innate and adaptive immune responses. To counter these challenges, the use of dietary immunomodulators has gained prominence. These bioactive compounds help restore immune competence by activating host defense pathways, enhancing resistance to disease, and supporting overall health—especially in suboptimal rearing environments. As such, immunomodulators are becoming vital components in the pursuit of more sustainable and resilient poultry production systems

3. Categories and Functional Mechanisms of Immunomodulators

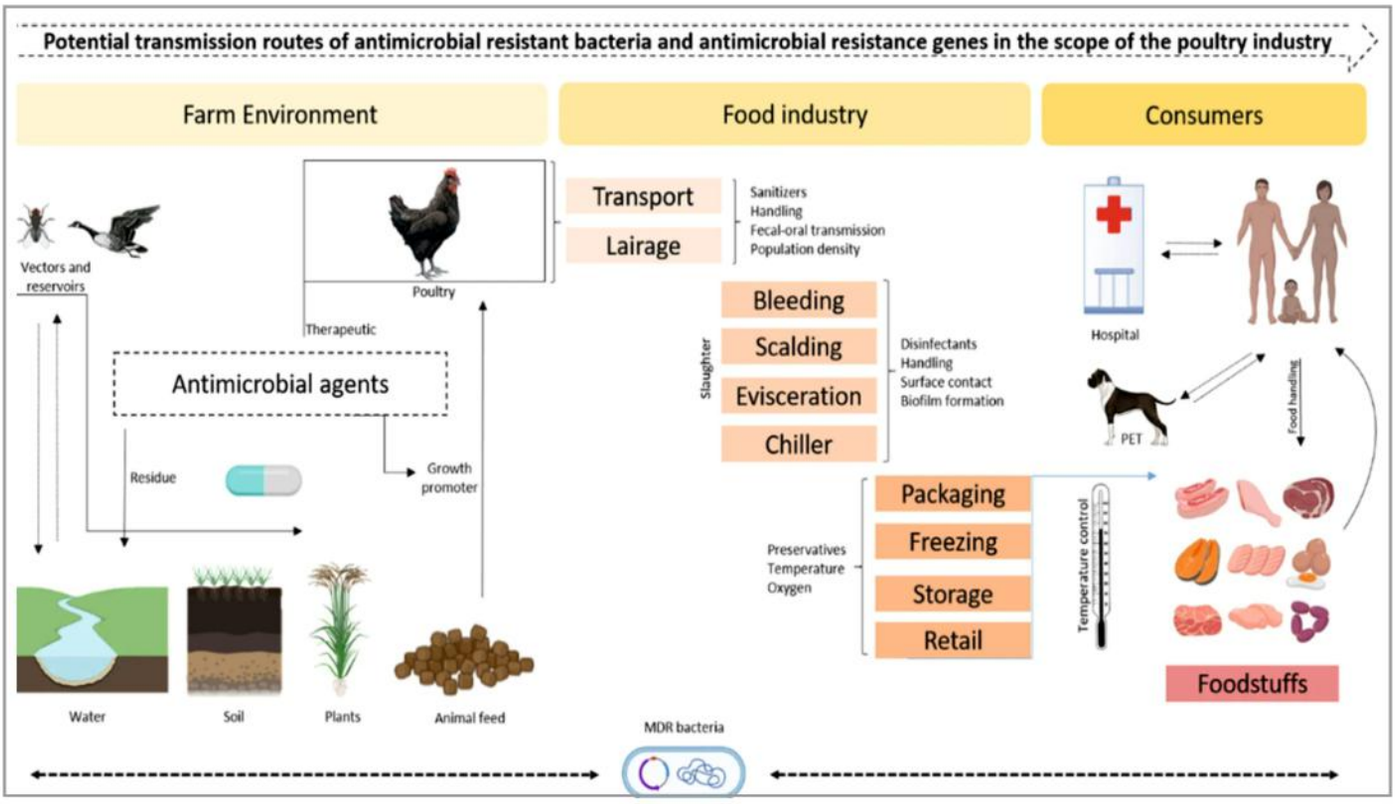
3.1 Probiotics

Probiotics live microorganisms that confer health benefits to the host when administered in adequate amounts play a pivotal role in modulating immune function in poultry. Commonly used strains include *Bacillus spp.*, *Lactobacillus spp.*, and various yeast-based formulations such as *Saccharomyces cerevisiae*. These beneficial microbes help establish and maintain a balanced intestinal microbiota, a prerequisite for proper immune system development and function.

Mechanistically, probiotics enhance mucosal immunity by stimulating the production of immunoglobulins (IgA, IgM, IgG) and modulating cytokine profiles toward an anti-inflammatory and pathogen-resilient state. They also activate key components of the innate immune system, including phagocytic cells like macrophages and natural killer (NK) cells. Evidence suggests that multi-strain probiotic formulations provide broader immunological benefits than single-strain products, leading to improved disease resistance and systemic immune modulation.

3.2 Prebiotics

Prebiotics are non-digestible dietary fibers that selectively stimulate the growth and activity of beneficial gut bacteria. Among the most studied in poultry are mannan-oligosaccharides (MOS) and fructo-oligosaccharides (FOS). These compounds enhance gut microbial ecology and lead to the production of short-chain fatty acids (SCFAs), particularly butyrate and propionate, which play a critical role in host immunity.

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SCFAs have been shown to strengthen intestinal barrier integrity, modulate inflammatory responses, and promote the expression of regulatory cytokines that contribute to mucosal and systemic immunity. By inhibiting the colonization of enteric pathogens and reducing gut-derived inflammation, prebiotics contribute significantly to overall immune homeostasis.

3.3 Phytogenic Compounds

Phytogenics, also known as phytobiotics, encompass a diverse range of plant-derived bioactive compounds such as essential oils, flavonoids, tannins, alkaloids, and saponins. These substances exhibit a broad spectrum of biological activities, including antimicrobial, antioxidant, and anti-inflammatory effects, all of which are relevant to immune modulation.

Through interaction with immune signaling pathways, phytogenics influence the activity and proliferation of immune cells, regulate cytokine production, and modulate gene expression related to immunity and inflammation. In addition, they enhance gut health by preserving epithelial integrity and modulating microbial populations, which indirectly contributes to stronger systemic immune function.

3.4 Polysaccharides and Plant Extracts

Botanical polysaccharides and complex plant extracts, such as those derived from *Astragalus membranaceus*, *Atractylodes macrocephala*, and *Medicago sativa* (alfalfa), are recognized for their immunostimulatory properties. These compounds enhance the development of primary and secondary lymphoid organs, promote complement system activation, and upregulate the production of cytokines and antibodies. Such extracts are particularly effective under oxidative and inflammatory stress, conditions common in intensive poultry systems. By improving the birds' ability to cope with environmental and physiological stressors, they help maintain immune readiness and resilience.

3.5 Emerging Additives and Environmental Modulators

Innovative approaches to immunomodulation include the use of nano-minerals (e.g., nano-selenium, nano-zinc), which offer enhanced bioavailability and targeted delivery compared to traditional mineral supplements. These nano-formulations have demonstrated potential in strengthening antioxidant defenses and improving immune parameters under challenging conditions such as heat stress or pathogen exposure. Bee-derived products like propolis possess antimicrobial and immunostimulatory properties that contribute to enhanced disease resistance and gut health. Similarly, butyric acid derivatives act as energy sources for enterocytes and modulate inflammatory pathways. Beyond dietary additives, environmental factors also play a role in immunomodulation. Optimized lighting schedules, particularly those aligning with natural circadian rhythms, have been shown to reduce oxidative stress and support immune organ function. These interventions reflect a more holistic approach to enhancing immunity in poultry, integrating nutritional, physiological, and environmental strategies.

4. Benefits for Sustainability

4.1 Enhanced Health and Performance

The use of immunomodulators not only strengthens immune responses but also improves feed efficiency, growth performance, and overall flock health—particularly under challenging environmental or pathogenic conditions. This supports more consistent production outcomes with reduced losses.

4.2 Antibiotic Reduction and Antimicrobial Resistance Mitigation

By promoting natural immune resilience, immunomodulators reduce reliance on antibiotics, thereby helping to combat the emergence of antimicrobial resistance (AMR). This shift aligns with One Health initiatives, which aim to protect human, animal, and environmental health simultaneously.

4.3 Environmental and Economic Benefits

Several natural immunomodulators are derived from agricultural by-products (e.g., olive leaf, fruit waste), offering cost-effective and environmentally friendly alternatives. Their use results in lower environmental pollution and enhances the sustainability of integrated poultry systems.

5. Practical Applications and Limitations

5.1 Dosage Optimization and Synergy

While natural additives offer numerous benefits, their effects are dose-dependent. Over-supplementation can lead to immunosuppression, while insufficient doses may be ineffective. Synergistic combinations, such as probiotics with phytogenics or organic acids, are increasingly being explored to maximize immune benefits, though they require precise formulation.

5.2 Ingredient Variability and Quality Assurance

The efficacy of plant-based additives depends heavily on the consistency of their bioactive content, which can vary by plant species, cultivation region, harvest season, and extraction method. Hence, standardization and quality control are critical for ensuring consistent results.

5.3 Regulatory and Safety Considerations

Regulatory frameworks governing the use of immunomodulators vary by region. While some countries have clear guidelines for phytogenics and probiotics, others require more extensive validation. Safety assessments, withdrawal periods, and residue testing remain important to meet international food safety standards.

5.4 Research Gaps

More long-term, field-based trials are needed to confirm the economic viability and health benefits of these strategies in diverse production environments. In particular, studies comparing immunomodulators across different climates, breeds, and rearing conditions are limited.

6. Case Studies and Global Implementations

In regions such as Africa and Southeast Asia, where access to veterinary services is limited and antimicrobial misuse is prevalent, immunomodulators have been successfully adopted to enhance flock immunity and reduce mortality. Pilot projects involving herbal polysaccharides, probiotic blends, and immune-boosting feed supplements have demonstrated improvements in vaccine responsiveness (e.g., Newcastle Disease Virus) and overall flock performance. In commercial settings in Europe and North America, producers are integrating multi-modal immunomodulation strategies into feed and water regimens to comply with AGP-free standards while maintaining performance benchmarks.

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7. Integrated Immunomodulation: Toward Systemic Approaches

7.1 Holistic Health Management

Immunomodulation should not be viewed in isolation. A systems-based approach that incorporates nutritional strategies, optimal lighting, biosecurity, and vaccination programs yields the greatest benefits. This holistic model promotes long-term flock resilience and aligns with sustainable intensification goals.

7.2 Context-Specific Formulation

Immunomodulatory programs must be tailored to the specific pathogen pressures, environmental conditions, and production goals of each operation. Region-specific feed resources and stressors should inform the selection and combination of additives.

7.3 Life-Cycle and Environmental Considerations

Improving bird immunity also reduces pathogen shedding and antibiotic residues in manure, which has downstream benefits for soil health and environmental safety. Thus, immunomodulation serves not only flock welfare but also broader ecosystem health.

8. Future Directions

Ongoing advancements in 'omics' sciences, particularly metagenomics and transcriptomics, are providing deeper insights into the complex interplay between the host immune system and the gut microbiome. These technologies are crucial for unraveling molecular pathways involved in immune modulation and for identifying biomarkers that guide targeted interventions.

At the same time, innovation in delivery technologies—including microencapsulation, controlled-release systems, and nanocarrier platforms—is enhancing the bioavailability, stability, and targeted delivery of immunomodulatory agents. Such systems are paving the way for a new generation of precision-based immunomodulators, tailored to specific physiological or environmental challenges faced by poultry. To fully realize these advancements, international regulatory harmonization is essential. Streamlined and science-based policies must be developed to facilitate the safe, standardized, and widespread application of immunomodulators globally. This will ensure equitable access to next-generation tools that support sustainable and resilient poultry production across diverse production systems.

9. Conclusion

The strategic application of immunomodulators in poultry production offers a scientifically grounded, globally relevant solution to several of the sector's most pressing challenges. By reinforcing birds' natural immune defences through dietary and environmental interventions, producers can achieve improved performance, reduced disease incidence, lower antibiotic use, and greater environmental stewardship. As part of a broader systems-based model, immunomodulation is a key pillar in the movement toward resilient, sustainable, and health-conscious poultry systems worldwide.

Dr. Pawar Rutik Namdev[1] **(MVSc Scholar)**
Dr. Shipra Tiwari[1] **(MVSc Scholar)**
Dr. Mohini Tripathi[1] **(MVSc Scholar)**
[1]Department of Livestock Products Technology,
College of Veterinary Science and Animal Husbandry,
DUVASU Mathura (281001), India

ARTICLE

Doubling Time - Bacteria in Optimum

The doubling time for bacteria causing infections in poultry varies significantly depending on the specific bacteria and the conditions they are in. However, some common poultry pathogens, like E. coli, can double in number every 20 minutes under ideal laboratory conditions. In real-world poultry environments, the doubling time can range from a few hours to potentially even days, depending on factors like nutrient availability, temperature, and the presence of competing microorganisms.

Factors Influencing Bacterial Doubling Time in Poultry:

Specific Bacteria:

Different bacteria have different growth rates. For example, E. coli can divide every 20 minutes, while Mycobacterium avium subsp. paratuberculosis has a generation time of about 24 hours.

Temperature:

Bacteria generally grow best at specific temperatures. For many poultry pathogens, this is around 37°C (98.6°F).

Nutrient Availability:

Bacteria need nutrients to grow. A rich, nutrient-rich environment will support faster growth rates than a nutrient-poor one.

Other Microorganisms:

Competition from other bacteria or microorganisms can slow down the growth of a particular pathogen.

Environmental Conditions:

Factors like pH, oxygen levels, and the presence of antimicrobial substances can also affect bacterial growth.

Examples:

E. coli, when provided with optimal conditions in a lab, can divide every 20 minutes.

Salmonella can also multiply rapidly, especially in warm, moist environments.

The doubling time for bacteria in the gastrointestinal tract (GIT) of poultry can vary widely depending on location (cecum, etc.) and the specific bacteria, but estimates range from a few hours to several hours.

Bird Factors:

Immune System: A strong immune system can slow down bacterial growth and spread.

Age: Younger birds, especially those with immature immune systems, may be more susceptible to infection and faster bacterial doubling times.

Breed: Some breeds may be more susceptible to certain bacterial infections than others.

Implications for Poultry Farming:

Understanding bacterial doubling times is crucial for biosecurity and disease management in poultry farms.

Rapidly multiplying bacteria can quickly lead to outbreaks of disease, causing economic losses due to increased mortality, reduced growth rates, and decreased egg production.

Proper hygiene, sanitation, and biosecurity measures are essential to minimize the risk of bacterial contamination and proliferation in poultry farms.

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Poultry Federation of India

Team Honoured by IPEMA / Poultry India and Telangana Poultry Federation

During the recent visit of Poultry Federation of India Team to Hyderabad, Mr. Sanjeev Gupta, Vice President (HQ), Mr. Ricky Thaper, Joint Secretary, PFI and Mr. Harpal Dhanda, MD, Unnat Group, had an engaging meeting with Mr. Uday Singh, President, Mr. Chakradhar Rao, Committee Member and Mr. Srikanth Manchama, Treasurer, IPEMA / Poultry India, at Poultry India office, where key issues, future strategies and growth opportunities for the poultry sector were discussed.

The PFI visiting Team was honoured by Poultry India Team. Under the dynamic and visionary leadership of Mr. Uday Singh Bayas, Poultry India has seen remarkable progress in recent years. As President of IPEMA / Poultry India, Mr. Uday has been instrumental in elevating the status of the poultry sector through sustained efforts in policy advocacy, capacity building, and strategic industry collaborations. By fostering dialogue between government bodies and poultry players, the Poultry India team has consistently demonstrated excellence, foresight and unwavering commitment to industry growth.

The efforts led by Mr. Uday and Poultry India committee members has not only helped unite the poultry fraternity across regions but also positioned Poultry India as a trusted and influential platform for innovation, modernization, and sustainability in Indian poultry production and trade.

Later along with Mr. Uday Singh and Mr. Chakradhar Roa, Poultry Federation of India Team visited the newly established Cull Bird Single Window Sales facility. This pioneering infrastructure, developed by the Telangana Poultry Federation, represents a transformative step for the poultry marketing ecosystem in South India.

Mr. Mohan Reddy, President of Telangana Poultry Federation honoured the visiting PFI Team members and explained the functioning of this Cull Bird Single Window Sales facility.

This Single Window Sales system is designed to streamline the cull bird marketing process, enhance transparency, and ensure hygienic, efficient, and well-regulated trade practices. It is a model initiative that demonstrates how regional leadership, when aligned with industry needs, can result in practical and impactful solutions. Special appreciation goes to Mr. Mohan Reddy, President of Telangana Poultry Federation, and his entire team for their vision, dedication, and execution of this milestone project. Their work sets a benchmark for other regions to emulate. Kudos to Telangana Poultry Federation Team for leading innovation in poultry marketing.

The PFI team invited Telangana Poultry Federation Members to attend the upcoming 36th AGM of Poultry Federation of India being organised at Hotel Ramada, Lucknow (UP) ON October 08-09, 2025 and Mr. Mohan Reddy, President of Telangana Poultry Federation confirmed for their participation.

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Alltech Celebrates

Dr. Aman Sayed's 20-year anniversary, honouring his leadership in South Asia

Alltech is proud to celebrate a significant milestone as **Dr. Aman Sayed**, managing director of Alltech India and regional director of Alltech in South Asia, completes **20 years of distinguished service** with the company. A recognized leader in the animal health and nutrition industry, Dr. Aman has played a pivotal role in shaping Alltech's presence and impact across South Asia and beyond.

Over the past two decades, Alltech has experienced significant growth and become a major player in South Asia's animal nutrition sector. The global agri-food company now has four warehouses across India, an Alltech IFM laboratory in Bangalore, a blending plant and warehouse in Bangladesh, an office in Nepal, and an organic trace minerals production plant in Pune — the largest facility of its kind in Asia.

Under Dr. Aman's leadership, the South Asia team has excelled in bringing Alltech's global expertise to local food production challenges, introducing tailored nutritional solutions packages that help farmers improve animal performance and lower overall costs. Producers from across the region benefit from Alltech's premium, science-backed speciality ingredients, on-farm expertise and laboratory analytical services, farm sustainability programs and other educational resources.

The Alltech IFM laboratory in Bangalore, for example, allows customers to have their feed rations evaluated for protein and energy availability, providing insights into the efficacy of their feed and how supplementation might benefit performance and help lower costs. A new lab in the Pune facility, set to open this year, will offer additional services, such as screening feed for anti-nutritional factors, adulteration, mycotoxins and heavy metals.

Alltech South Asia currently serves the poultry, dairy, aquaculture, pet and equine industries. Dr. Aman is now focused on expanding the company's regional portfolio to include pig nutrition. He continues to emphasize the importance of delivering high-quality nutritional solutions with integrity and a strong commitment to clean, ethical business practices.

During his tenure in South Asia, Dr. Aman has helped to transform Alltech into a well-respected premium brand with significant annual growth and a strong manufacturing presence. In addition to leaning heavily into innovation, he has invested in training and development opportunities for his sales team, equipping them with the knowledge needed to best serve the region's agri-food producers.

An alumnus of Bombay Veterinary College, Dr. Aman holds a master's degree in veterinary science (poultry science) and earned gold medals during both his undergraduate and postgraduate studies. Early in his career, he identified a critical shortage of veterinary specialists in the field — a realization that drove him to pursue roles focused on practical support and customer engagement.

Before joining Alltech in 2005, Dr. Aman gained rich experience through several key assignments. His early contributions with Kemin included establishing a R&D farm and delivering technical services for the poultry industry. Internationally, he led the Free-Range Poultry Project with Emirates Agriculture Technologies in Sharjah and oversaw sales and distribution of Kentucky Equine Research products in the UAE and across the Middle East, supporting the equine racing industry. These diverse roles broadened his perspective and shaped the global leadership approach he brings to Alltech today.

One of the most profound influences on Dr. Aman's professional life came through his early interactions with Dr. Pearse Lyons, the late founder of Alltech. Inspired by Dr. Lyons' proactive philosophy of tackling problems head-on, Dr. Aman has embraced a leadership style grounded in innovation, teamwork and integrity.

In his pursuit of continuous growth, Dr. Aman has participated in several professional development programs, most notably the Alltech Mini-MBA, developed in collaboration with University College Dublin's Michael Smurfit Graduate Business School. The program deepened his entrepreneurial mindset and reinforced the value of calculated risk-taking to achieve sustainable innovation and profitability.

Reflecting on his journey, Dr. Aman said: "It's often said that everything comes to you at the right time — and you just need to trust the process. That perfectly sums up my career path. I'm truly grateful to be part of a company whose vision I wholeheartedly believe in. Choosing to leave my role in the Middle East and return to India has been the most rewarding decision of my career."

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Dr. Aman plays a pivotal role not only within Alltech but also across the broader animal health industry. He currently serves as vice president of the Indian Federation of Animal Health Companies (INFAH), chairs INFAH's Aqua Subcommittee, and is a member of the Ad Hoc Board of Studies in Animal Husbandry and Allied Sciences at the Faculty of Agriculture, Veterinary, Fisheries and Allied Sciences, Goa University. In recognition of his exceptional contributions to the industry, Dr. Aman was honoured with the *'Best Development Leader 2023'* award by Poultry Fortune group and an *'IPSA Fellow 2024'* award by the Indian Poultry Science Association.

With a career spanning over 25 years, Dr. Aman has navigated both calm and challenging waters, consistently making critical decisions that drive business growth and long-term profitability. Throughout his journey, he has remained grounded in three core values that guide his leadership and mentorship styles: honesty, openness and diligence. He believes these principles reflect a person's ethics, growth mindset, and degree of engagement—both personally and professionally.

"The only way to do exceptional work is to enjoy what you do," Dr. Aman said. "I feel passionate and energetic about my role at Alltech — it's what I live and breathe."

A firm believer in teamwork over individual success, he attributes his achievements to the collective spirit of collaboration within his teams.

As Alltech continues to expand its regional footprint, Dr. Aman remains focused on nurturing a purpose-driven culture centred on people, planet and producer profitability. Looking ahead, he aspires to scale Alltech's mission of Working Together for a Planet of Plenty® across broader geographies while staying firmly rooted in the values that have guided his success.

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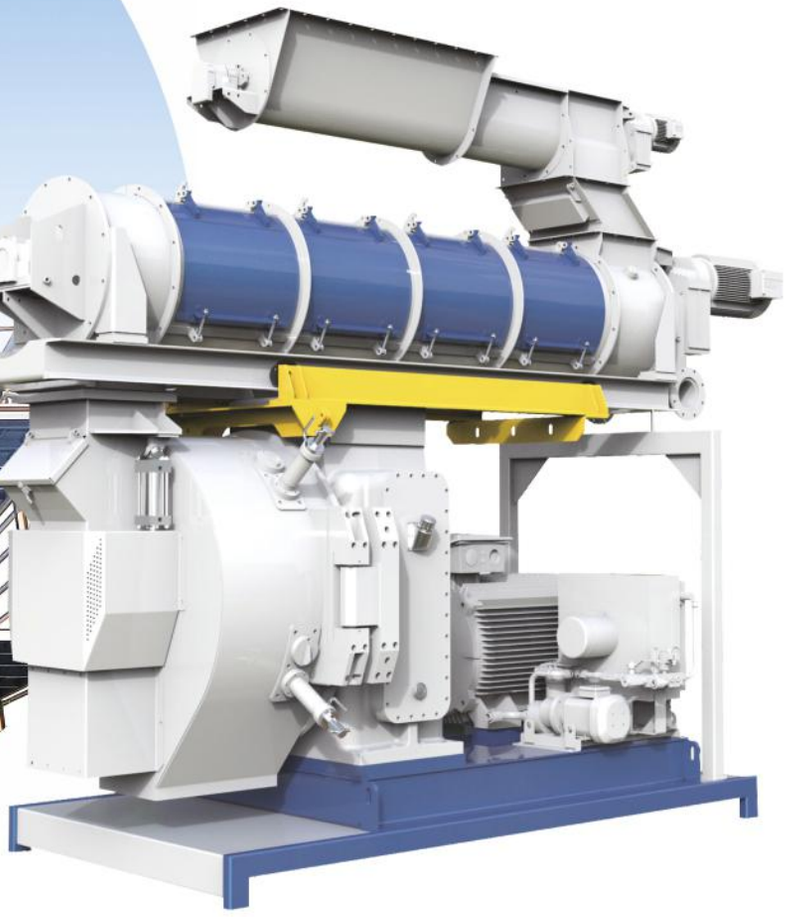

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Calsporin®: The Probiotic Edge for Poultry Performance and Gut Health

By Pauline Rovers-Paap
Principal Relations Manager, Orffa Additives B.V., The Netherlands

A successful poultry production system depends on optimal gut health, efficient feed utilization, and strong disease resistance. Calsporin®, a probiotic containing *Bacillus subtilis* C-3102, offers an evidence-based solution for enhancing these factors in broiler production. Supported by rigorous scientific research and extensive field experience, Calsporin® delivers measurable improvements in both growth performance and intestinal health, including better management of necrotic enteritis (NE).

Calsporin®- A Benchmark for Scientific Validation

Calsporin® delivers viable spores of *Bacillus subtilis* C-3102, a strain with a well-documented safety and efficacy profile in poultry. Isolated in Japan in 1986, it has been evaluated globally for decades. Notably, the European registration of Calsporin® at 30 ppm for all avian species followed stringent regulatory assessment and provides strong, independent confirmation of its efficacy at practical inclusion rates.

Gut Health and Performance Benefits

Calsporin® promotes a robust and resilient gut environment in broilers. Rather than generic microbial balance, specific studies demonstrate that Calsporin® supplementation increases beneficial bacterial populations and reduces colonization by key opportunistic pathogens such as *Salmonella*, *E. coli*, and *Clostridium perfringens*. Across multiple trials at 30 ppm, birds supplemented with Calsporin® achieved ~2 points better feed conversion ratio (FCR) on average and approximately +2.5% higher average daily gain (ADG), even when feed intake remained unchanged. Mortality rates were also lower in several trials, indicating greater flock resilience and health. Under stressful conditions, the beneficial effects of the probiotic appear even more evident and promising.

Additional studies at 50 ppm have revealed greater enhancements in growth and feed conversion efficiency, as shown through meta-analyses of trials with comparable designs. These gains, although modest on a per-bird basis, compound to create significant economic impact at commercial scale.

Mitigating Necrotic Enteritis: Mechanisms and Outcomes

Necrotic enteritis (NE), caused by *Clostridium perfringens*, is a major challenge in broiler operations. Calsporin® addresses NE by:

- Restricting the growth and colonization of *C. perfringens* through competitive exclusion and support of beneficial gut bacteria.
- Helping maintain intestinal barrier function and mucosal health, which limits lesion severity and promotes more rapid recovery from NE challenges.
- Optimizing the gut microbial environment to favor beneficial bacteria; after germination, *B. subtilis* C-3102 scavenges oxygen and supports *Lactobacilli*, lowering pathogen pressure and NE risk.

Real-world and controlled studies confirm that supplementing broiler diets with Calsporin® reduces both the incidence and severity of NE. Multiple trials have reported that inclusion of Calsporin® leads to significantly lower lesion scores, reduced mortality, and fewer therapeutic interventions, even under disease-challenged conditions.

Evidence from Controlled and Field Trials

In both controlled challenge models and farm-scale settings, birds fed Calsporin® have demonstrated measurable advantages:

- Lower intestinal lesion scores during both mild and severe NE outbreaks, often performing as well as or better than antibiotic controls.
- Significantly reduced mortality, with probiotic-fed flocks recovering feed intake and growth rates faster after disease events.
- Histological studies confirm that Calsporin® supplementation preserves gut morphology and villus structure—key to nutrient absorption and long-term performance.
- Fewer medical interventions were required to keep NE under control under farm-scale conditions.

A robust field trial program across various geographies has shown these benefits are reproducible, giving confidence in consistent results for commercial producers.

Stable, Practical, and Flexible for Modern Production

The spores in Calsporin® are highly heat-resistant, allowing the probiotic to withstand pelleting and remain viable throughout storage and feed delivery. Its use does not require a withdrawal period, making it well suited for antibiotic-reduction programs and integrated flock health strategies.

Conclusion

Calsporin® offers a proven and practical strategy for optimizing broiler productivity and health. Its performance and health benefits are supported by a rigorous scientific and regulatory foundation. By fostering a stable, resilient gut environment and helping manage intestinal challenges like necrotic enteritis, Calsporin® provides immediate and lasting value for poultry operations focused on efficiency, welfare, and profitability.

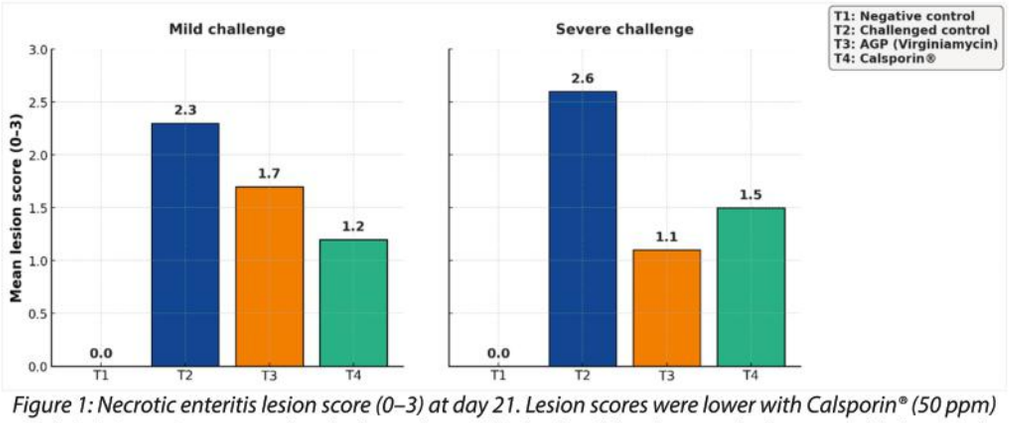

Figure 1: Necrotic enteritis lesion score (0–3) at day 21. Lesion scores were lower with Calsporin® (50 ppm) and virginiamycin compared to challenged control in both mild and severe challenge models ($p < 0.05$).

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Can AVIANCE improve body weight and performance in the peak-lay period of Free-range egg layers?

From 16 weeks to 40 weeks is a crucial period for the development of the laying hen and the subsequent performance of the flock. However, producers are increasingly concerned about this period because experience tells them how important feed intake and appetite is for the health and performance of the flock.

Challenges in Achieving Optimal Feed Intake During Peak Production

Typically egg producers in free range systems want the feed consumption and body weight gain in the early stages of the laying cycle because they are crucial to the overall success of the flock. Additionally, the genetic potential and evolution of the modern commercial layer continues to increase, especially at peak production. Ensuring sufficient nutrient intake at the point of peak egg mass production is of utmost importance but not always easily attainable. This can be a result of a number of reasons but mainly the rapid physiological development, demands of the onset of egg production, requirement for large increases in feed intake and stress. Insufficient feed intake at this stage will result in nutrient deficiency which will result in losses in growth development, egg number and egg size. From the producers data he will track bodyweight development, early egg weight and hen day production and this will show if the flock is utilising the nutrients from a balanced diet. Lower consumption will affect these results causing a plateau in bodyweight, egg weight and will lead to unevenness in the flock and the likelihood of behaviour problems and feather cover issues. Producers can try to encourage feed intake by an increase of light duration by 2 hours when initially starting the light up process or adjusting feed times and frequency, however the tools for directly enhancing appetite are limited.

Producers and the supply chain are continuously increasing the efficiency of egg production in technological investment in housing, management, and equipment. However, without effective bodyweight management and subsequent flock uniformity a number of important benchmarks including egg production, genetic potential and liveability can be negatively influenced. Bodyweight management is also necessary to ensure confidence where producers are looking to extend the duration of the laying cycle.

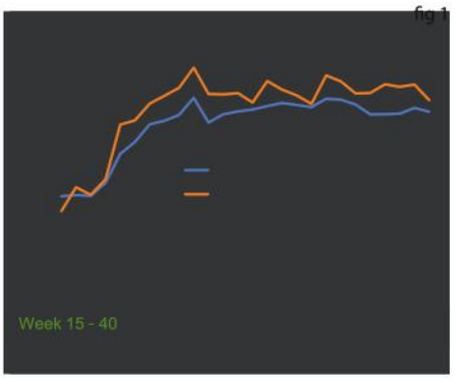
AVIANCE: A Promising Solution for Enhancing Performance

In response to finding options for the producer to utilise we conducted a trial earlier in 2024 on a large scale commercial free-range farm in Scotland we looked at measuring the improvements with the use of AVIANCE by Techna. AVIANCE is a natural feed additive which has been used for many years in the broiler industry to promote Feed intake, nutrient digestibility and improve gut health.

AVIANCE is backed by extensive research to improve the dynamic balance between the Intestinal integrity of the gut, its immune support function and the microbiome health. It is an essential oil based product which has a blend of coated Phenolic aromatic compounds, specifically Carvacrol, Thymol and Eugenol. AVIANCE helps feed intake and increases body weight development by increasing the absorption area (Villi) of the intestine for improved nutrient digestibility. It also modulates intestinal flora by reducing the growth of harmful bacteria.

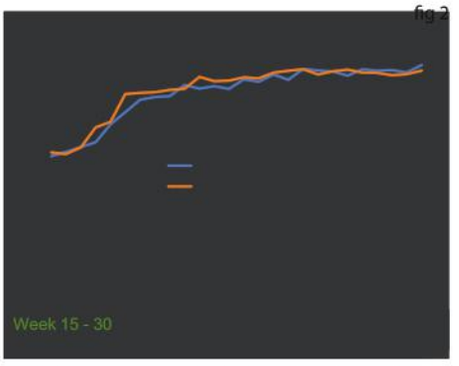
In order to investigate the benefits of AVIANCE in an egg layer production system we used a 32,000 Free range unit. Water and feed were on separate systems which allowed for a control side (blue line) and a treatment side (orange line). For comparison we looked at the differences in the data collected across Mortality, BW gain, feed intake and egg weight with the treatment side using 0.5kg/T of AVIANCE. This trial is still ongoing, and these are the interim results to 40 weeks.

fig 1



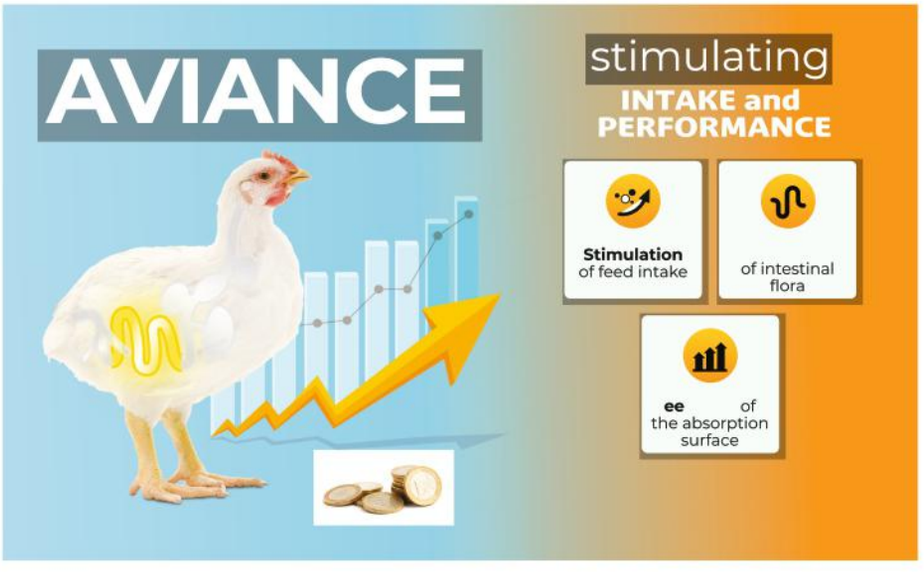
Feed intake measured in g/b/d in Fig 1.
This was significantly higher in the birds with AVIANCE against the control.

fig 2



In Fig 2 we can see that bodyweight showed a 32g Ave improvement in weekly weights was recorded. This was especially noticeable in the data at peak production from 25 to 30 weeks.

Not shown here but we also saw improvements in liveability and egg weight during this period.



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IPEMA/Poultry India Hosts

Partners Excellence Gathering Meet – 2025 to Celebrate Industry Collaboration and Success

IPEMA

Hyderabad, 29 July 2025 — The Indian Poultry Equipment Manufacturers Association (IPEMA) and Poultry India proudly hosted the Partners Excellence Gathering Meet – 2025 (Meet – Connect – Celebrate) at Hotel Deccan Serai, Hyderabad. This special evening was dedicated to honouring the unwavering support of our valued vendors and partners who played a pivotal role in the tremendous success of the 16th edition of Poultry India Expo 2024.

The evening brought together around 40 key collaborators of IPEMA/Poultry India in an atmosphere of appreciation, networking, and celebration. A major highlight of the event was the acknowledgment of Poultry India's recognition as the **"Top Industry Catalyst 2025"** at the prestigious *Exhibition Excellence Awards*.

Mr. Uday Singh Bayas, President of IPEMA/Poultry India, addressed the gathering with heartfelt gratitude:

"On behalf of IPEMA and Poultry India, I extend our deepest thanks to every associate and vendor who contributed to the grand success of Poultry India Expo 2024. Your dedication is what drives this industry forward. We are proud of our shared achievement in being named 'Top Industry Catalyst 2025' and look forward to continuing this journey together at the upcoming 17th Poultry India Expo 2025."

Felicitation of Excellence

As a token of appreciation, the following vendors were felicitated during the event for their exceptional contributions:

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2. **Namdhari Events N Promotions (P) Ltd.** – *Event Partner*
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24. K Shashider & Co Chartered Accountants - *Internal Auditors*

The Excellence Gathering Meet – 2025 served as both a celebration and a reaffirmation of IPEMA/Poultry India's commitment to collective success and industry leadership.

As preparations begin for the 17th edition of Poultry India Expo 2025, the organization remains enthusiastic about continuing to foster strong collaborations, innovation, and excellence within the poultry industry.

Thank you for your incredible contribution. This success is yours!

– Team IPEMA / Poultry India

For more information, visit: www.poultryindia.co.in

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UK-India trade deal retains tariffs on poultry and eggs

The UK and India have signed a Fair-Trade Agreement to reduce trade barriers and boost economic growth. The deal maintains tariffs on chicken, egg products, sugar, and pork from India to protect UK poultry and pig farmers from competition with lower-priced imports, especially those with potentially lower animal welfare standards.

India has lower animal welfare standards than in the UK, allowing barren battery cages for laying hens – a farming practice that has been banned in the UK since 20212.

But the deal includes the Indian government halving tariff reductions on whisky and gin – from 150% to 75% – before reducing them further to 40% by year 10. It also covers tariffs on salmon, chocolate, biscuits, and lamb.

The UK to set its own standards

Additionally, the UK will retain its regulatory autonomy to set its own independent standards, ensuring it can continue to uphold high levels of protection for animal, human and plant health

The 'National Farmers Union has been actively lobbying the government to ensure that the trade does not compromise UK production standards or allow for imports of lower-welfare meat.

Tom Bradshaw, NFU president, welcomed the agreement, saying ministers had listened to the union's worries. "Ministers have clearly listened to our concerns around upholding the UK's production standards and safeguarding our most sensitive farming sectors by maintaining the current levels of tariffs for imports of sugar, chicken, eggs and port."

He said it was positive that the government has managed to secure full access to the Indian market for high quality British lamb, adding: "Although it's been unsuccessful in increasing export opportunities for other products such as apples and oats – something we were asking for."

He added: "The big concern with this deal is that our dairy products have been liberalised yet again – the third successive trade deal with a major dairy producing company – while our dairy farmers will not see any greater access for British cheeses and dairy products on the Indian market. The cumulative impact of ever greater access to our domestic food markets in trade deals cannot be overlooked and is something our government must seriously consider."

Animal welfare

Compassion in world Farming said that despite initial concerns around lower welfare imports, "we are pleased to see there won't be tariff reductions on pork, chicken or egg imports to the UK. This means it will continue to be more expensive to import these products, deterring imports that would otherwise have the potential to undercut UK farmers on welfare and price."

David Bowles, RSPCA head of public affairs, also welcomed the deal, although he said the language on animal welfare was not as robust as in the past. However, he said that it does permit the UK to set its own welfare standards and bring in clear labelling on how a product has been produced.

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E. COLI - Single Bacteria Causing Many Infections in Poultry

The Silent Killer in Poultry Farms — and Why We're Still Underestimating It

For decades, Escherichia coli was seen as just an "opportunist" — a harmless gut resident that only became a problem under poor conditions. But science is rewriting that story.

Today, Avian Pathogenic E. coli (APEC) is one of the biggest threats to poultry health worldwide — and it's hitting hard:

E. coli management in layer birds is crucial due to its potential to cause significant economic losses through decreased egg production, increased mortality, and the spread of antibiotic resistance. Effective management strategies focus on preventing outbreaks by minimizing stress, maintaining good biosecurity, and controlling predisposing factors.

Here's why E. coli management is so important in layer birds:

Economic Impact:

Reduced egg production:

E. coli infections, particularly colibacillosis, can lead to inflammation of the oviduct (salpingitis), significantly impacting egg production.

Increased mortality:

E. coli can cause severe illness and death in layer flocks, resulting in substantial economic losses.

Costly treatment:

Managing E. coli infections often involves the use of antibiotics, which can contribute to the development of antibiotic resistance and increase treatment costs.

Animal Welfare Concerns:

Disease and discomfort:

E. coli infections can cause various clinical signs, including respiratory distress, diarrhea, and decreased activity, leading to discomfort and reduced quality of life for the birds.

Increased susceptibility to other diseases:

E. coli can weaken the immune system, making birds more vulnerable to other diseases and infections.

Public Health Concerns:

Food safety:

E. coli can be transmitted through the food chain, posing a potential risk to human health.

Antibiotic resistance:

The use of antibiotics to treat E. coli infections can contribute to the development of antibiotic-resistant strains, which can be a significant public health concern.

Management Strategies:

Good hygiene and biosecurity:

Maintaining a clean environment, practicing strict biosecurity measures, and ensuring proper ventilation can minimize the risk of E. coli exposure.

Stress reduction:

Reducing stress factors like overcrowding, poor ventilation, and inadequate nutrition can help prevent E. coli outbreaks.

Early detection and treatment:

Promptly identifying and treating E. coli infections can help minimize their impact on the flock.

Alternative therapies:

Exploring alternative treatments like vaccines, probiotics, and bacteriophages can help reduce reliance on antibiotics.

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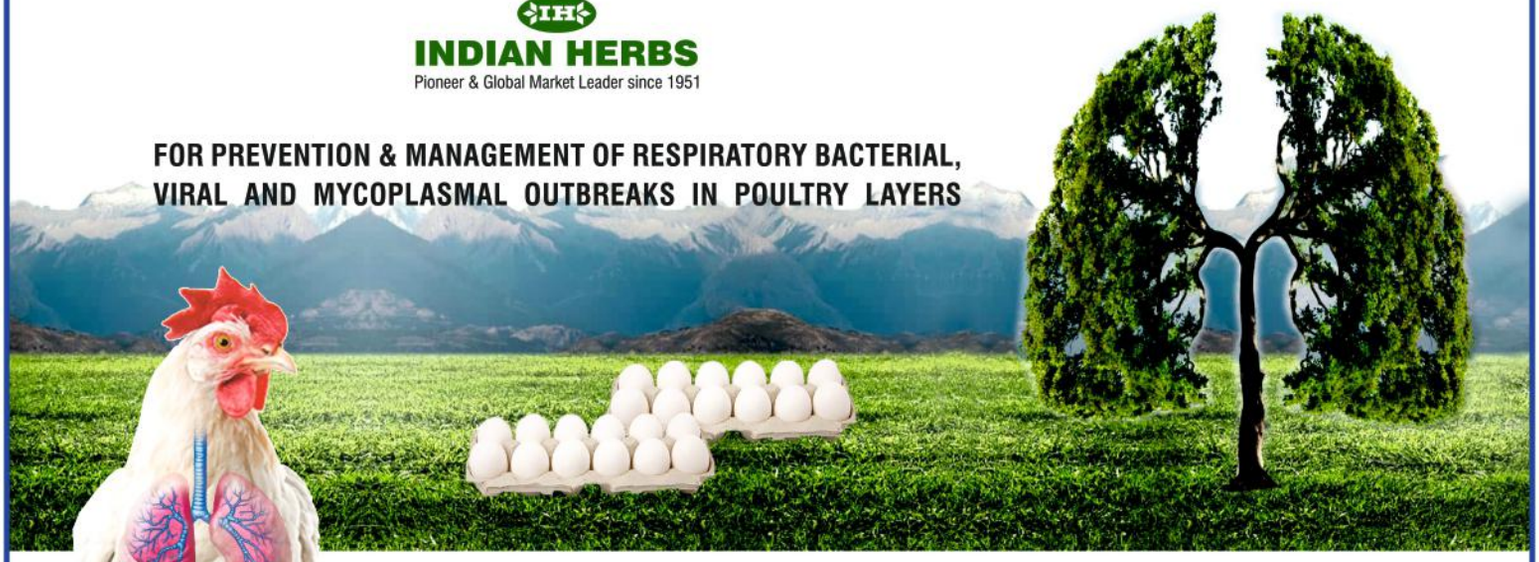

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Animunin Liquid

Broilers	Layers	Quantity (For 100 Birds/day)
0-2 Weeks	0-8 Weeks	10 ml
3-4 Weeks	9-20 Weeks	20 ml
5-6 Weeks	21-72 Weeks	40 ml

PRESENTATION

Powder : 10 kg & 25 kg
Liquid : 1 Ltr & 5 Ltr

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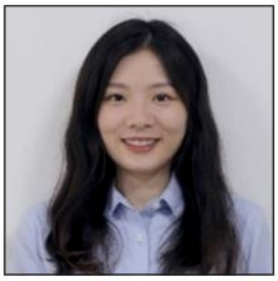
Effects of Dietary Taurine

Supplementation on Growth Performance and Serum Biochemical Indices in Broilers Subjected to Chronic Heat Stress



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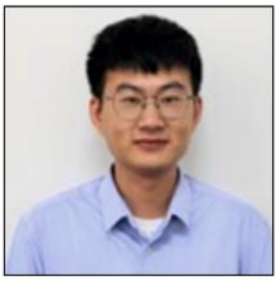

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The global poultry industry, particularly broiler production, has grown rapidly to meet the increasing demand for animal protein. However, chronic heat stress(CHS) presents a significant challenge, affecting approximately 60% of broiler farming regions worldwide and resulting in billions of dollars in annual economic losses due to reduced growth rates and elevated mortality. CHS negatively impacts broiler health through multiple physiological mechanisms. Prolonged heat exposure decreases feed intake and reallocates metabolic energy toward thermoregulation, thereby impairing growth performance. Affected broilers exhibit diminished growth, compromised organ function, and weakened immune responses, all contributing to substantial economic consequences.

Taurine, a β-amino acid that does not participate in protein synthesis, has shown promising effects in mitigating stress-related disorders across various species. It exerts protective effects by activating antioxidant pathways, stabilizing cellular membranes, and modulating neurotransmitter activity. However, research on the application of taurine in broilers under CHS remains limited, particularly concerning optimal dosage and long-term physiological outcomes. This study aims to investigate the effects of dietary taurine supplementation on the growth performance and serum biochemical indices of broilers exposed to CHS. The findings may offer practical strategies for improving poultry resilience in heat-prone environments and contribute to the sustainability of the poultry industry.

A total of 600 AA^+ broilers were randomly assigned to 5 dietary treatments, with 12 replicates of 10 broilers.From 22 to 42 days of age, chickens in the normal control(NC) and heat stress(HS) groups were fed a basal diet(Table 1). From days 29 to 42, in the taurine-supplemented groups (HT0.05, HT0.1, HT0.2) of the HS (heat stress) model, the chickens were fed a basal diet supplemented with 0.05%, 0.1%, and 0.2% taurine, respectively. From day 22 to day 28, all the chickens were raised at an appropriate temperature. From 29 to 42 days of age, NC-group chickens were kept at appropriate temperature. Meanwhile, chickens in the HS and HT groups were reared in a high-temperature environment(9:00-21:00, 32±1°C; 21:00-9:00, 22±1°C). Taurine, with a purity of 99.9%, was purchased from Zhejiang NHU Company Ltd.

Table 1. Composition and calculated nutrient content of the basal diet.

Ingredient	0-21d (g/kg)	22-42d (g/kg)
Corn	542	594.75
Soybean meal(43%)	275	228
Soybean oil	43	45
Flour	80	80
Dicalcium phosphate	20.5	18
Limestone	9	8.2
Lysine(98%, HCl)	4.3	3.9
DL-Methionine	3.4	2.8
Threonine	2.6	2.2
Valine	1.6	1.3
Arginine	1.8	1.6
Isoleucine	1.25	1.05
Tryptophan	0.2	0.2
Glycine	2	2
Vitamin premix[1]	2	2
Mineral premix[2]	2	2
Choline chloride(50%)	1.5	1.4
Mould inhibitor	1	1
Phytase	0.1	0.1
Corn starch	4.25	2.0
Salt	2.5	2.5
Total		1000
Calculated nutrient and energy level		
AMEn, Kcal/kg	3100	3100
CP, %	18.64	17.04
d-Lys, %	1.15	1.02
d-Thr, %	0.809	0.715
d-Met, %	0.582	0.506
M+C, %	0.827	0.735
d-Val, %	0.891	0.793
d-Ile, %	0.774	0.685
d-Arg, %	1.23	1.091
d-Trp, %	0.210	0.187
Ca, %	0.88	0.78
aP, %	0.44	0.39

[1] Supplied per kilogram of diet: vitamin A, 10,000 IU as vitamin A acetate; vitamin D_3, 4,500 IU as cholecalciferol; 65 IU of vitamin E; vitamin K, 3.0 mg as menadione sodium bisulfate; thiamine, 2.5 mg as thiamine mononitrate; 6.5 mg of riboflavin; pyridoxine, 3.2 mg as pyridoxine hydrochloride; 0.03 mg of vitamin B12; pantothenic acid, 18 mg as D-calcium pantothenate; 60 mg of niacin; 1.9 mg of folic acid; and 0.25 mg of biotin.

[2] Supplied per kilogram of diet: copper 8 mg, ferrous 40 mg, manganese 100 mg, zinc 60mg, iodine 0.7 mg, selenium 0.3 mg.

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Exploring Chemistry, Improving Life

Growth performance

During days 29 to 42, Compared with the NC group, HS treatment significantly decreased the average daily gain(ADG) and average daily feed intake(ADFI, $P < 0.05$). and increased the FCR ($P < 0.05$). Compared with the HS group, the FCR of the HT group decreased. Specifically, the HT0.1 group saw a reduction of approximately 4.9%, but there was no significant difference($P > 0.05$).

Table 2 Effects of dietary taurine supplementation on the growth performance in broilers under chronic heat exposure.

Treatment	29-42d ADG	29-42d ADFI	29-42d FCR
NC	114.82±1.29^{a}	190.2±1.18^{a}	1.66±0.01^{b}
HS	73.27±1.10^{b}	149.89±2.2^{b}	2.05±0.04^{a}
HT0.05	74.43±1.56^{b}	146.63±0.90^{b}	1.98±0.03^{a}
HT0.1	77.53±2.03^{b}	150.61±2.17^{b}	1.95±0.04^{a}
HT0.2	76.51±1.57^{b}	149.74±1.79^{b}	1.96±0.02^{a}
S.E.M	2.165	2.268	0.022
P	<0.001	<0.001	<0.001

$^{a, b}$ Means with different superscripts within each column are significantly different ($P < 0.05$)

Serum biochemical indices

Compared with the NC group and HS group, there were no significant differences in the activities of alanine transaminase(ALT), as well as the levels of cortisol and thyroxine in the blood of broilers in the HT group ($P > 0.05$). Compared with the NC group, the blood uric acid level in the HS group was higher. However, due to taurine supplementation, the blood uric acid level in the HT group was significantly decreased, and in particular, the uric acid level in the HT0.2 group was significantly lower than that in the NC group ($P < 0.05$). Compared with the HS group, the blood malondialdehyde (MDA) level in the HT group showed a decreasing trend, yet no significant difference was observed($P > 0.05$).

Table 3 Effects of dietary taurine supplementation on the serum biochemical indices in broilers under chronic heat exposure.

Treatment	Uric acid (μmol/L)	ALT (U/L)	MDA (ng/mL)	Cortisol (ng/mL)	Thyroxine (ng/mL)
NC	108.24^{a}	4.19	5.45	104.50	229.58
HS	127.64^{a}	4.00	6.79	112.22	255.19
HT0.05	108.11^{a}	4.18	5.72	110.10	327.93
HT0.1	100.28^{ab}	4.84	5.25	101.72	264.34
HT0.2	77.67^{b}	3.63	5.58	108.31	229.42
S.E.M	3.862	0.265	0.233	3.398	19.000
P	0.001	0.716	0.254	0.879	0.473

$^{a, b}$ Means with different superscripts within each column are significantly different ($P < 0.05$)

Conclusion

In the present study, heat stress significantly decreased the growth performance of broilers. However, dietary supplementation with taurine over a period of two weeks was found to mitigate the adverse effects of chronic heat exposure on growth performance. Blood biochemical indicators, such as blood uric acid level and MDA, can reflect the physiological status of animals. Studies have demonstrated that heat stress induces renal metabolic imbalance and exacerbates oxidative stress in broilers, whereas taurine supplementation exerts a mitigating effect on the damage caused by heat stress.Based on the findings of this study, a dietary taurine supplementation level of 0.1% is recommended for broilers subjected to heat stress.

BULLETIN

सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन द्वारा मासिक मीटिंग का आयोजन

सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन, करनाल द्वारा दिनांक 28 जुलाई 2025 को होटल येलो सफायर, करनाल में मासिक मीटिंग का आयोजन किया गया। श्री सुभाष नरवाल, प्रेजीडेंट, सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन ने आए हुए सभी फारमर्स का स्वागत किया।

श्री सुरिन्द्र भुटानी, सेक्रेटरी, सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन ने सभी फार्मर को अपने अपने फार्म की पशु पालन मंत्रालय द्वारा जारी दिशा निर्देशों के अनुसार अपने फार्म को पंजीकृत करने के बारे में विस्तार से बताया।

श्री सुरिन्द्र भुटानी ने फार्म पर समय समय पर किए जाने वाले जरूरी कार्यों के बारे में भी बताया और कहा कि फार्म पर बायोस्क्योरिटी का पूरा ध्यान रखें और किसी बाहरी व्यक्ति को फार्म के अन्दर जाने से सख्ती से रोका जाना चाहिए। उन्होंने कहा कि कमजोर बायोस्क्योरिटी के कारण फार्म पर तरह तरह की बीमारियां आती है और इस कारण फारमर का बहुत नुकसान होता है। अंत में श्री नरवाल ने आए हुए सभी फारमर्स भाइयों का तहेदिल से धन्यवाद किया और एसोसिशन के मेंबर्स को जुलाई महीने में श्री अशोक कुमार नीलोखेड़ी, श्री ब्रिज गुप्ता, श्री एन.के. सेतिया, श्री रवि सभरवाल को सम्मानित किया।

Ensuring Poultry Feed Quality:

Importance of Pre-Assessment of Raw Materials and Final Feed

Dr. Badineedi Hanumanth Rao , Dr. Sushant Mhatre
Dr. Jayanta Bhattacharyya

Poultry farming is a rapidly growing sector within animal agriculture, driven by rising global demand for meat and eggs. Feed quality is a determining factor in the success of poultry operations. In the competitive and cost-sensitive world of poultry production, feed quality is the cornerstone of flock health, performance, and profitability. While precise formulations are essential, it's the actual nutrient value of the raw materials and the consistency of finished feed that ultimately determine bird outcomes. Contaminated, adulterated, or nutritionally imbalanced feed can lead to compromised bird health, reduced growth rates, poor feed conversion ratios (FCR), and economic losses. Therefore, pre-assessment of feed ingredients and finished feed is not merely a best practice—it is a necessity.

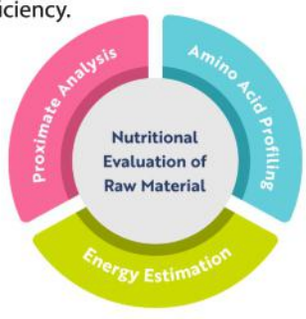
Importance of Raw Material Pre-Assessment

The feed manufacturing process begins with the selection and procurement of raw materials and the quality and safety of these ingredients directly influence the nutritional integrity and safety of the final feed. Pre-assessment of raw materials is a critical control point that ensures only high-quality inputs enter the production line. This process helps to reduce nutritional variability, enhance feed consistency, and minimize the risk of contamination.

A) Nutritional Quality Evaluation

To ensure optimal nutrient supply, raw materials must be evaluated for their basic nutritional composition:

1) **Proximate Analysis:** This includes measurement of moisture, crude protein, crude fat, crude fiber, and total ash content. These values help in determining the nutritive value of the ingredient and aid in balancing feed formulations.
2) **Amino Acid Profiling:** Critical for high-performance poultry diets, this analysis ensures that essential amino acids like lysine, methionine, and threonine are present in sufficient quantities.
3) **Energy Estimation:** Calculating Metabolizable Energy (ME) is essential for formulating energy-balanced rations, ensuring optimum growth and feed efficiency.



B) Contaminant Screening

Screening for potential contaminants is vital to prevent feed-related health issues and production losses:

1) **Mycotoxins:** Particularly aflatoxins and ochratoxins, which are harmful even at low concentrations. Mycotoxin contamination can impair immune function and reduce productivity.
2) **Heavy Metals:** Elements such as lead, mercury, and cadmium can accumulate in poultry tissues and pose serious health risks to both birds and consumers.
3) **Pesticide Residues:** Traces of agricultural chemicals used in crop production must be assessed to ensure they remain within permissible limits.
4) **Microbial Load:** Presence of pathogenic microorganisms like *Salmonella*, *Escherichia coli*, and molds must be evaluated to prevent disease outbreaks and spoilage.

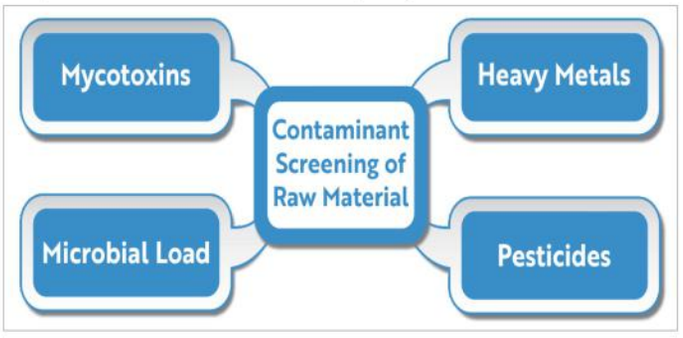


Table: 1. Ingredient assay table

Ingredient	Protein	Moisture	Fat	Fiber	Calcium	Phosphorus	Sodium	Magnesium	Aflatoxin	Pepsin Digest	Urease	Microscopic	M.I.U.*	Brix	Frequency**
Corn	✓	✓							✓						W
Cereal Grain	✓	✓													W
Soybean Meal	✓	✓		✓							✓				E
Middlings	✓	✓		✓											W
Alfalfa	✓			✓											W
Rice Mill Feed	✓		✓	✓											W
Corn Gluten Feed	✓														E
Fish Meal	✓		✓		✓	✓	✓	✓		✓		✓			E
Meat/Bone Meal	✓	✓	✓		✓	✓	✓			✓		✓			E
Poultry Meal	✓	✓	✓		✓	✓	✓			✓		✓			E
Peanut Meal	✓	✓		✓					✓						E
Peanut Hulls	✓			✓					✓						W
Cottonseed Meal	✓								✓						E
Cottonseeds	✓		✓	✓					✓						W
Sunflower Meal	✓			✓											E
Safflower Meal	✓			✓											E
Bakery Meal	✓		✓									✓			E
Molasses														✓	E
Fat													✓		E
Limestone					✓			✓							W
Feather Meal	✓	✓										✓			E

*Moisture, Impurities, Unsaponifiables | **W = Weekly, E = Every Load
Source: Table from feedtech V, AFIA.

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Pre-Assessment of Finished Feed

Once the feed is manufactured, it must undergo post-production testing to verify its nutritional accuracy, physical quality, and microbiological safety. This step ensures that the final product is both effective and safe for animal consumption.

A) Physical and Nutritional Quality Parameters

Key quality parameters assessed in finished feed include:

1) **Pellet Durability and Texture:** Proper pellet hardness and minimal fines ensure better intake and reduce feed wastage.
2) **Homogeneity:** Uniform mixing of micronutrients, vitamins, minerals, and medications is essential to deliver a balanced diet and prevent deficiencies or overdosing.
3) **Moisture Content:** Maintaining appropriate moisture levels prevents microbial growth, especially mold, during storage.
4) **Mycotoxins:** Regular monitoring and preventive measures are essential to ensure feed safety and performance.
5) **Pathogen Testing:** Finished feed is routinely tested for the presence of pathogens, particularly *Salmonella* spp., which is a major concern in poultry production.

Modern operations must go beyond paper formulations and implement a robust pre-assessment and quality control system. Even a 2–3% variation in key nutrients such as calcium, phosphorus, crude protein, or metabolizable energy (ME) can result in immunosuppression, skeletal deformities, higher feed conversion ratios, or economic losses (Singh et al., 2020; Pesti et al., 2009).

Let's explore three real-world case studies that demonstrate why testing raw materials and finished feed should never be optional.

Case Study 1: Mortality and Lameness Due to Mineral Imbalance

A broiler farm in the southern region of India reported continuous mortality and lameness among growing birds. Laboratory evaluation of feed samples and tissue diagnostics revealed:

- A clear imbalance in calcium and phosphorus
- Positive test results for Infectious Bursal Disease (IBD)

Interestingly, a neighboring flock fed with the same formula plus NSP enzymes (NSPases) showed no mortality—highlighting the role of enzymes in enhancing nutrient release and gut integrity (Cowieson *et al.*, 2010; Chandel *et al.*, 2022). Further investigation found that the Dicalcium Phosphate (DCP) in use had lower-than-declared phosphorus content (14.5% instead of the standard 18%). The farmer attempted to correct this by supplementing sodium hydrogen phosphate via water. However, by then, birds were already showing signs of rubbery legs, stunted growth, and poor performance.

Key Learning: Even slight raw material deviations can compromise skeletal health and immunity. Pre-assessment of minerals like DCP is critical before inclusion.

Case Study 2: Mycotoxin Risk Missed Due to Visual Assumptions

A feed mill in central India sourced visually clean maize, assuming it to be toxin-free. However, a third-party analysis revealed aflatoxin B1 levels exceeding 50 ppb, well above the BIS safety limit of 20 ppb for poultry (FAO, 2011; Ghosh *et al.*, 2018).

Birds fed this contaminated maize developed:

- Enlarged livers (hepatomegaly)
- Immunosuppression and poor vaccine response
- Secondary infections and increased mortality
- The economic consequences included poor FCR, lower livability, and treatment costs.

Key Learning: Visual appearance is **NOT** a reliable indicator of quality. Even clean-looking maize can carry invisible aflatoxins. Routine testing is essential.

Field Data Snapshot: Real Deviations in Indian Poultry Feed

Parameter	Expected Value	Observed Range	Risk & Impact
Calcium in DCP	23–24%	26–28% (Overlined)	Limits phosphorus bioavailability
Phosphorus in DCP	18–18.5%	14–17%	Rickets, lameness
Aflatoxin in maize	<20 ppb	40–90 ppb	Liver damage, suppressed immunity
Crude Protein in SBM	44–46%	46% (with urea)	Digestibility failure, poor egg quality
ME in rice bran	~1800 kcal/kg	1500–2000 kcal/kg	Energy imbalance, FCR loss

(Source: CARI-ICAR reports & FeedTech India lab data, 2021–2024)

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Case Study 3: Protein Deviation Due to Undeclared Adulteration

In southern India, a layer farmer observed a drop in egg production and pale yolks. Investigation revealed that the soybean meal used, though labeled as 46% crude protein, was adulterated with urea, a common but illegal nitrogen booster (Vijayasarathi et al., 2018).

Analysis showed:

- Low lysine and methionine digestibility
- Reduced feed intake and consistency in laying
- Pale yolk pigmentation

The farmer shifted to verified suppliers and began routine amino acid digestibility checks, which resolved the issue within two weeks (Sindhu et al., 2021).

Key Learning: Don't rely on crude protein values alone. Always validate digestible amino acid levels—especially lysine and methionine—for optimal performance.

Key Takeaways

- Raw material variability is real—especially in DCP, maize, and soybean meal
- Routine lab testing of Ca, P, CP, fiber, and toxins is non-negotiable
- Feed enzymes and toxin binders provide support but are not a substitute for QA
- Finished feed must be tested to confirm actual delivery matches formulation
- Testing costs far less than losses from mortality, poor FCR, or egg drop (Patra *et al.*, 2020)

Final Thoughts

A feed may look perfect on paper, but what matters is what reaches the bird's gut.The pre-assessment of raw materials and finished feed is fundamental to achieving sustainable, safe, and profitable poultry production. Implementing robust quality testing and control measures at every stage of feed manufacturing ensures optimal bird health, enhances performance, and reduces production losses. Moreover, consistent feed quality strengthens consumer trust in poultry products, especially in an era of rising concerns over food safety, antibiotic resistance, and regulatory compliance. As the poultry industry continues to evolve, prioritizing feed quality assurance remains more important than ever. In a competitive, low-margin industry, **Quality Assurance** isn't optional—it's survival.

Bentoli

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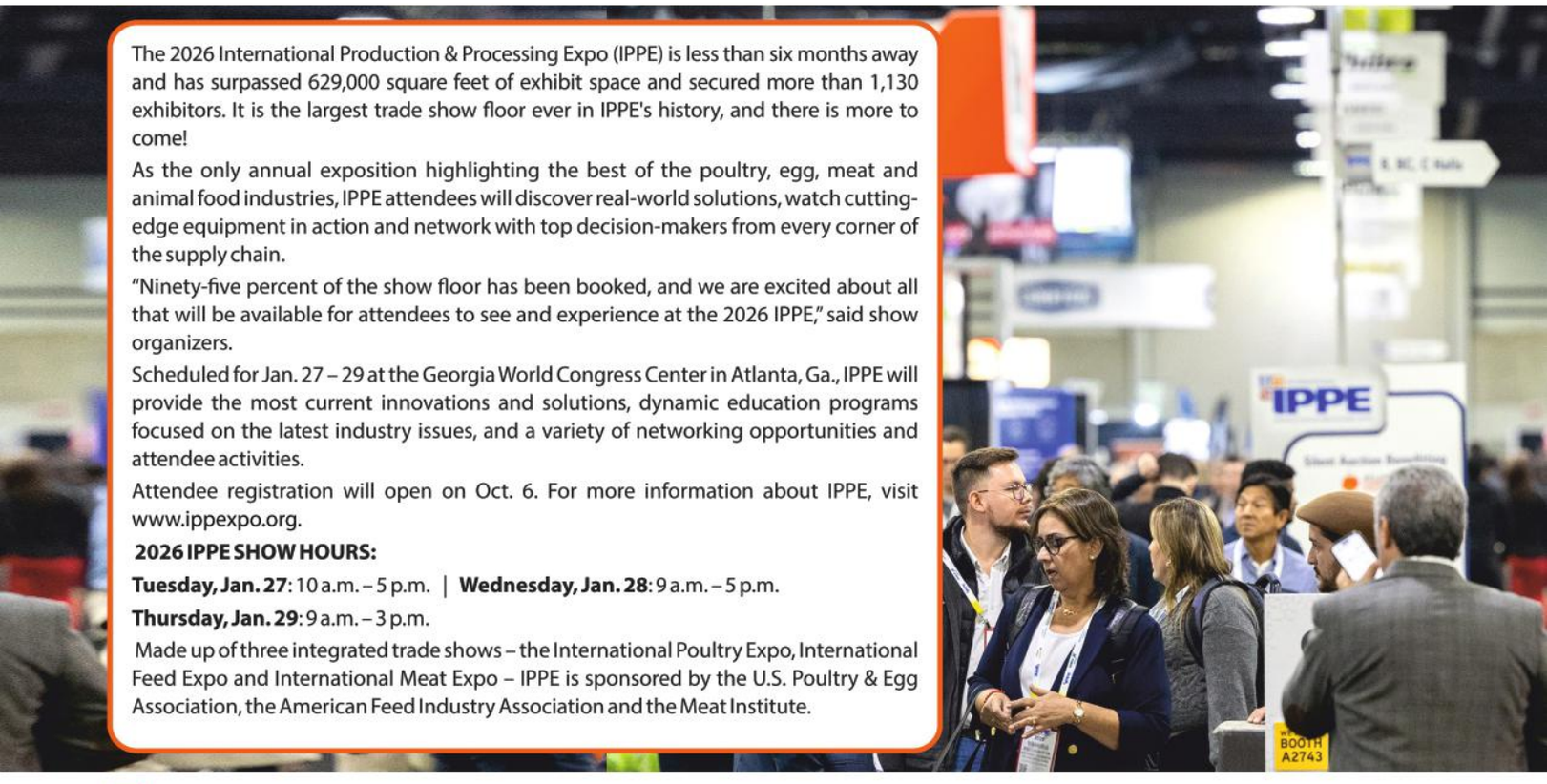
BULLETIN

Largest Trade Show Floor Ever for the 2026 IPPE!



The 2026 International Production & Processing Expo (IPPE) is less than six months away and has surpassed 629,000 square feet of exhibit space and secured more than 1,130 exhibitors. It is the largest trade show floor ever in IPPE's history, and there is more to come!

As the only annual exposition highlighting the best of the poultry, egg, meat and animal food industries, IPPE attendees will discover real-world solutions, watch cutting-edge equipment in action and network with top decision-makers from every corner of the supply chain.

"Ninety-five percent of the show floor has been booked, and we are excited about all that will be available for attendees to see and experience at the 2026 IPPE," said show organizers.

Scheduled for Jan. 27 – 29 at the Georgia World Congress Center in Atlanta, Ga., IPPE will provide the most current innovations and solutions, dynamic education programs focused on the latest industry issues, and a variety of networking opportunities and attendee activities.

Attendee registration will open on Oct. 6. For more information about IPPE, visit www.ippexpo.org.

2026 IPPE SHOW HOURS:

Tuesday, Jan. 27: 10 a.m. – 5 p.m. | **Wednesday, Jan. 28**: 9 a.m. – 5 p.m.

Thursday, Jan. 29: 9 a.m. – 3 p.m.

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ARTICLE

काले चिकन अंडे का रहस्य

चंदन कुमार', मोहम्मद दानिश और चारु सिंह

भारत की देशी कड़कनाथ मुर्गी की नस्ल से प्राप्त कड़कनाथ के अंडों ने अपनी असाधारण पोषण संरचना और संभावित स्वास्थ्य लाभों के कारण लोगों का ध्यान आकर्षित किया है । पाककला और पारंपरिक चमत्कार, काला मुर्गे का मांस, अपने सफेद मांस वाले समकक्षों से फाइब्रोमेलानोसिस नामक एक अनोखी आनुवंशिक स्थिति के कारण अलग दिखता है , जो पंखों, त्वचा, हड्डियों और आंतरिक अंगों सहित ऊतकों में अति–रंजकता का कारण बनता है। इस विशिष्ट रंग, कथित स्वास्थ्य लाभों और अनूठे स्वाद के कारण, भारत सहित दुनिया भर की विभिन्न संस्कृतियों में काले मुर्गे की नस्लों की माँग बहुत अधिक है और अक्सर, यह काफी महंगी भी होती है। इन प्रजातियों के अंडों में भी कई ऐसे पोषक तत्व होते हैं जिनके बारे में सीमित शोध और शोध के कारण कम जानकारी है।

इस लेख में हम इन पहलुओं पर विस्तार से चर्चा करेंगे। जहाँ कई मुर्गियों की नस्लें कुछ हद तक मेलेनिज्म प्रदर्शित करती हैं, वहीं तीन नस्लें अपने गहरे रंग के मांस और जैसी व्यापक मान्यता के लिए विशिष्ट हैं। **अयम सेमानी** (इंडोनेशिया) इंडोनेशिया के जावा द्वीप से आता है, जो अपने इंद्रधनुषी काले पंखों और कंघी से लेकर चोंच, जीभ, मांस और यहां तक कि आंतरिक अंगों तक लगभग पूरी तरह से काले रंग की उपस्थिति के लिए जाना जाता है। उनकी हड्डियां भी गहरे रंग की होती हैं, हालांकि उनका खून सामान्य रूप से रंगीन होता है । **कड़कनाथ** (भारत) भारत की एक बेशकीमती देशी मुर्गी की नस्ल है। इसे 2018 में एक भौगोलिक संकेत (जीआई) टैग प्राप्त हुआ, जिसने इसके विशिष्ट मूल को मान्यता दी। **सिल्की (चीन)** प्राचीन चीन में उत्पन्न हुआ, जो अपने अनोखे, मुलायम और रोएँदार पंखों के लिए प्रसिद्ध है जो रेशम या फर से मिलते जुलते हैं, जो इसे अन्य मुर्गी नस्लों से अलग करता है। कड़कनाथ के अंडे , जिनके क्रीम से लेकर हल्के भूरे रंग के खोल और एक गाढ़ी, गहरे रंग की जर्दी होती है

काले चिकन अंडे की गुणवत्ता

आम धारणाओं के विपरीत, फाइब्रोमेलानोसिस , जो काली मुर्गियों को उनका विशिष्ट काला रंग देता है, उनके अंडों तक नहीं फैलता। काली मुर्गियों की नस्लें अयम सेमानी, कड़कनाथ और सिल्की आमतौर पर क्रीम, टिंटेड या हल्के भूरे रंग के अंडे देते हैं । मुर्गियों द्वारा दिए गए कोई भी "काले अंडे" असली नहीं होते। अंडे के छिलके का रंग विभिन्न आनुवंशिक कारकों द्वारा निर्धारित होता है, जो फाइब्रोमेलानोसिस से संबंधित नहीं होते हैं, जो काली मुर्गी के शरीर में गहरे रंग के रंगद्रव्य का कारण बनते हैं।

कड़कनाथ के अंडों में व्यावसायिक अंडों की तुलना में लगातार उच्च क्रूड प्रोटीन (सीपी) सामग्री होने की सूचना मिलती है। अध्ययन दर्शाते हैं कि कड़कनाथ के अंडों में प्रोटीन का स्तर 11.7: से 12.8% तक हो सकता है, जबकि व्यावसायिक ब्रॉयलर अंडों में आमतौर पर 10.9: से 11.5% के आसपास दिखाई देते हैं। जबकि समग्र प्रोटीन सामग्री अधिक है, भविष्य के शोध आणविक स्तर पर विशिष्ट प्रोटीन अंशों और उनके अमीनो एसिड प्रोफाइल का पता लगा सकते हैं। विभिन्न अंडे के सफेद प्रोटीन (जैसे, ओवलब्यूमिन , ओवोट्रांसफरिन , लाइसोजाइम) और जर्दी प्रोटीन (जैसे, विटेलोजेनिन) की विभेदक जीन अभिव्यक्ति कड़कनाथ अंडे के प्रोटीन की जैवसक्रियता और पाचनशक्ति को प्रभावित कर सकती है। मास स्पेक्ट्रोमेट्री–आधारित प्रोटिओमिक्स जैसी तकनीकें कड़कनाथ के अंडों में नए पेप्टाइड्स या संशोधित प्रोटीन की पहचान कर सकती हैं

काले मुर्गी के अंडों की जर्दी का रंग आम तौर पर गहरा पीला होता है, जो पक्षी के आहार से प्रभावित होता है, खासकर अगर वे खुले में घूमते हैं और विविध प्राकृतिक चारा खाते हैं। फैटी एसिड की संरचना भिन्न होती है, कड़कनाथ के अंडों में अक्सर संतृप्त वसा अम्ल के मुकाबले अधिक अनुकूल असंतृप्त वसा अम्ल का अनुपात और ओमेगा–3 फैटी एसिड सहित लाभकारी पॉलीअनसेचुरेटेड फैटी एसिड की उच्च सांद्रता प्रदर्शित होती है। ओमेगा–3 की यह उच्च मात्रा विशेष रूप से उल्लेखनीय है, क्योंकि ये फैटी एसिड हृदय स्वास्थ्य, सूजन में कमी और मस्तिष्क के कार्य के लिए महत्वपूर्ण हैं। कड़कनाथ के अंडों में जरूरी विटामिन और खनिज ज़्यादा पाए जाते हैं। इनमें व्यावसायिक अंडों की तुलना में आयरन, विटामिन बी12 और कुछ सूक्ष्म खनिज ज़्यादा मात्रा में पाए जाते हैं। व्यावसायिक अंडों में विटामिन ए, बी2, बी5, बी6, बी12, डी, ई और के के साथ–साथ फोलेट , फॉस्फोरस, सेलेनियम, कैल्शियम और जिंक का भी अच्छा स्रोत होता है। कड़कनाथ के अंडों में मौजूद आयरन की उच्च मात्रा आयरन की कमी से होने वाले एनीमिया से निपटने के लिए विशेष रूप से फायदेमंद है।

कड़कनाथ के अंडों को उनके उच्च एंटीऑक्सीडेंट स्तर के लिए जाना जाता है। ये एंटीऑक्सीडेंट मुक्त कणों से लड़ने और कोशिकाओं को ऑक्सीडेटिव क्षति से बचाने में मदद करते हैं, जिससे दीर्घकालिक रोगों का जोखिम कम हो सकता है। कड़कनाथ के अंडों की उच्च एंटीऑक्सीडेंट क्षमता मुर्गी में एक अधिक मजबूत अंतर्जात एंटीऑक्सीडेंट प्रणाली या अंडे में संश्लेषित और जमा होने वाले विशिष्ट एंटीऑक्सीडेंट यौगिकों की उपस्थिति का संकेत देती है।

भौतिक अंडे की गुणवत्ता के पैरामीटर:

काली मुर्गियों की नस्लें आमतौर पर व्यावसायिक रूप से अंडे देने वाली मुर्गियों की तुलना में ज़्यादा अंडे नहीं देतीं। इनका अंडा उत्पादन मामूली होता है, जो अयम के लिए प्रति वर्ष 60–120 अंडे तक होता है। सेमानी और सिल्की , और कड़कनाथ के लिए सालाना लगभग 80–100 अंडे।

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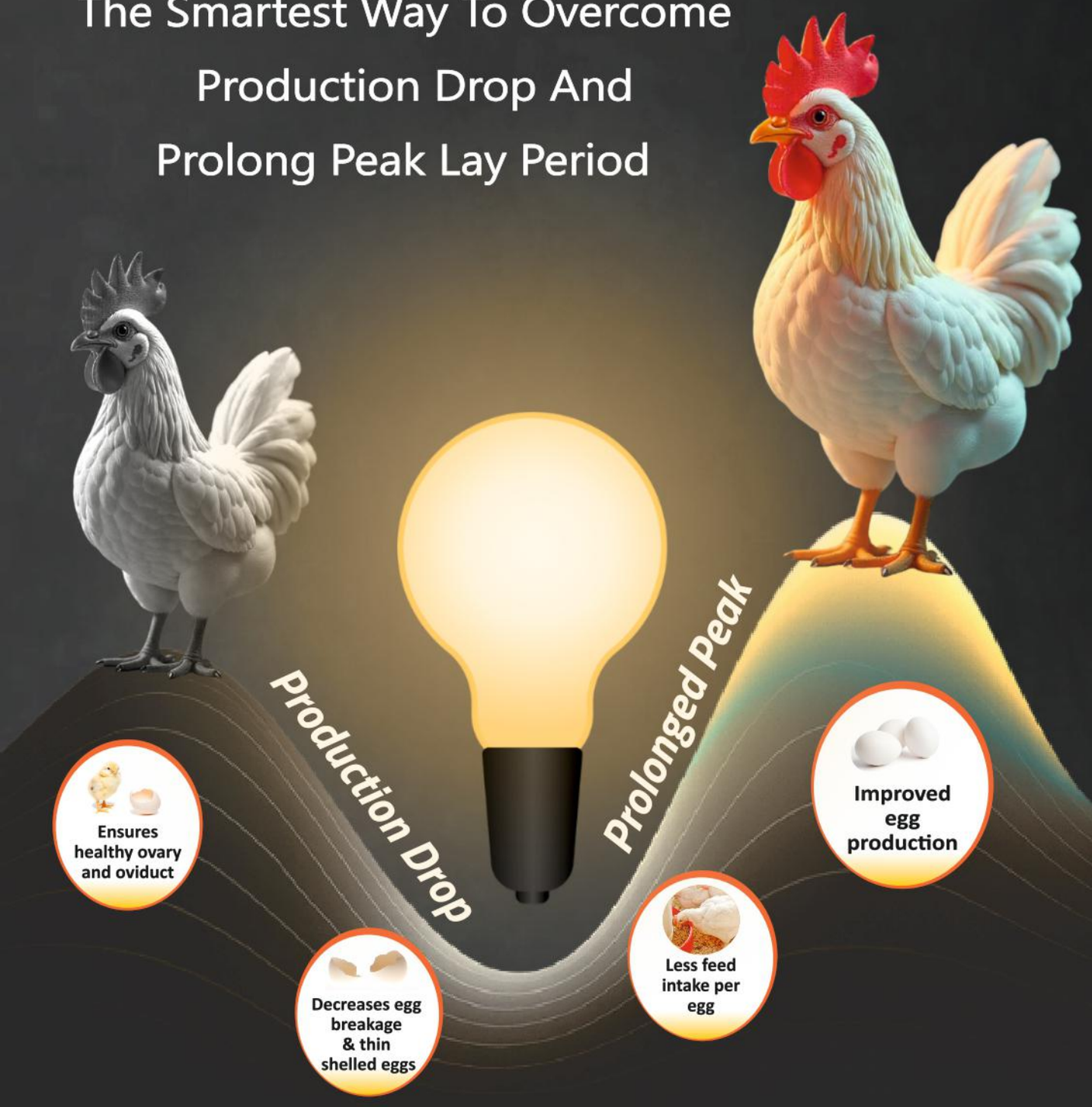

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यह कम उत्पादन उनके मांस और अंडे दोनों के उच्च मूल्य और दुर्लभता में योगदान देता है। सिल्की विशेष रूप से अपनी मजबूत ब्रूडिंग प्रवृत्ति के लिए जाने जाते हैं, अक्सर ब्रूडी हो जाते हैं और कड़कनाथ की तरह चूजों को पालने के लिए अंडे देना बंद कर देते हैं। कड़कनाथ के मामले में ये पक्षी आमतौर पर अपने अंडों पर नहीं बैठते हैं, इसलिए लोग चूजे पाने के लिए झाबुआ में अपने अंडे अन्य लेयर पक्षियों में रखने की कोशिश करते हैं। काली मुर्गी की नस्लें आमतौर पर छोटे से मध्यम आकार के अंडे देती हैं। उदाहरण के लिए, कड़कनाथ के अंडों का वजन आमतौर पर लगभग 43–45 ग्राम होता है। सिल्की के अंडों को अक्सर बहुत छोटा बताया जाता है। कड़कनाथ के अंडों पर अध्ययनों ने अंडा उत्पादन से संबंधित जीनों में बहुरूपता की जांच की है, जैसे कि प्रोलैक्टिन (पीआरएल) जीन । कड़कनाथ में पीआरएल24 लोकस का अध्ययन किया गया है। जबकि कुछ अध्ययन विशिष्ट एलील (जैसे, 'डी' एलील) और बेहतर कुल अंडों की संख्या के बीच संबंध का सुझाव देते हैं, निष्कर्ष भिन्न हो सकते हैं, जो अन्य आनुवंशिक कारकों और पर्यावरणीय परिस्थितियों के साथ जटिल अंतःक्रियाओं का संकेत देते हैं। पहले अंडे की उम्र, अंडे के वजन और समग्र अंडा उत्पादन दर से जुड़े अन्य संभावित जीन और मात्रात्मक विशेषता लोकी (क्यूटीएल) की पहचान करने के लिए अनुसंधान जारी है, जो आमतौर पर व्यावसायिक लेयर्स की तुलना में कड़कनाथ में कम होते हैं। इन आनुवंशिक कारकों को समझने से प्रजनन कार्यक्रमों को अन्य वांछनीय लक्षणों से समझौता किए बिना उत्पादकता बढ़ाने की जानकारी मिल सकती है।

स्वास्थ्य लाभ और चिकित्सीय क्षमता

कड़कनाथ के अंडों की विशिष्ट पोषण संबंधी विशेषता के कारण इसके कई स्वास्थ्य लाभ सामने आते हैं, जो प्रायः व्यावसायिक अंडों से मिलने वाले लाभों से भी अधिक होते हैं।

- कड़कनाथ के अंडों में कम कोलेस्ट्रॉल और उच्च ओमेगा–3 फैटी एसिड की मात्रा हृदय स्वास्थ्य के लिए महत्वपूर्ण है। यही कारण है कि ये उच्च रक्तचाप से पीड़ित लोगों या हृदय रोग के जोखिम को कम करने के इच्छुक लोगों के लिए एक पसंदीदा विकल्प हैं। हालाँकि व्यावसायिक अंडों से "अच्छे" कोलेस्ट्रॉल (एचडीएल) के स्तर में वृद्धि देखी गई है, लेकिन समग्र कोलेस्ट्रॉल प्रोफाइल पर इनका प्रभाव अलग–अलग हो सकता है । कड़कनाथ के अंडों का अधिक अनुकूल लिपिड प्रोफाइल हृदय स्वास्थ्य के लिए वर्तमान आहार संबंधी सिफारिशों के अनुरूप है।
- कड़कनाथ के अंडों में मौजूद विटामिन और खनिज, खासकर विटामिन बी12 और आयरन, प्रतिरक्षा प्रणाली को मजबूत बनाते हैं और शरीर को संक्रमणों और बीमारियों से बचाने में मदद करते हैं। उच्च एंटीऑक्सीडेंट स्तर प्रतिरक्षा कोशिकाओं में ऑक्सीडेटिव तनाव को कम करके प्रतिरक्षा प्रणाली के नियमन में भी महत्वपूर्ण भूमिका निभाते हैं।
- दोनों प्रकार के अंडे उच्च गुणवत्ता वाले प्रोटीन के उत्कृष्ट स्रोत हैं, जो मांसपेशियों की वृद्धि, मरम्मत और शरीर के समग्र कार्य के लिए आवश्यक हैं। अंडों में संतुलित पोषक तत्वों द्वारा प्रदान की जाने वाली निरंतर ऊर्जा उन्हें एक मूल्यवान आहार बनाती है। कड़कनाथ के अंडों में थोड़ी अधिक प्रोटीन सामग्री एथलीटों और अधिक प्रोटीन की आवश्यकता वाले व्यक्तियों के लिए उनकी उपयोगिता को और बढ़ा देती है।
- पारंपरिक भारतीय चिकित्सा में, कड़कनाथ के अंडों में चिकित्सीय गुण पाए जाते हैं, जिनमें गंभीर सिरदर्द, प्रसवोत्तर सिरदर्द, बेहोशी , अस्थमा, नेफ्रैटिस और दोनों प्रकार के मधुमेह का इलाज करने की क्षमता शामिल है। हालाँकि इन दावों के लिए नियंत्रित नैदानिक परीक्षणों के माध्यम से अधिक कठोर वैज्ञानिक सत्यापन की आवश्यकता है, फिर भी ये अंडों के सांस्कृतिक महत्व और स्वास्थ्य संबंधी लाभों को उजागर करते हैं। उदाहरण के लिए, इनमें मौजूद उच्च लौह तत्व एनीमिया से जुड़ी बेहोशी को कम करने में सहायक हो सकता है।

अंडों पर भावी शोधः–

भविष्य के अनुसंधान को अंतरों की गहन आणविक और आनुवंशिक समझ पर ध्यान केंद्रित करना चाहिए जैसे

- **ट्रांसक्रिप्टोमिक्स और प्रोटिओमिक्सः** कड़कनाथ मुर्गियों बनाम व्यावसायिक लेयर्स के डिंबवाहिनी और यकृत में जीन अभिव्यक्ति प्रोफाइल की तुलना करने वाले व्यापक अध्ययन, ताकि लिपिड चयापचय, एंटीऑक्सीडेंट संश्लेषण और प्रोटीन संरचना में अंतर के लिए जिम्मेदार जीन की पहचान की जा सके।
- **आनुवंशिक मार्करः** कड़कनाथ मुर्गियों में वांछित अंडों के गुणों (जैसे, कम कोलेस्ट्रॉल, उच्च ओमेगा–3) से जुड़े विशिष्ट आनुवंशिक मार्करों (जैसे, एसएनपी) की पहचान, जिसका प्रजनन कार्यक्रमों में लाभ उठाया जा सकता है।
- **मेटाबोलोमिक्सः** कड़कनाथ के अंडों का विस्तृत मेटाबोलोमिक्स विश्लेषण, ताकि ऐसे नवीन जैवसक्रिय यौगिकों की पहचान की जा सके जो उनके अद्वितीय स्वास्थ्य लाभों में योगदान करते हैं।
- **नैदानिक परीक्षणः** पारंपरिक औषधीय दावों को मान्य करने और विशिष्ट स्वास्थ्य परिणामों (जैसे, कोलेस्ट्रॉल के स्तर, सूजन के लक्षण, एंटीऑक्सीडेंट स्थिति) पर कड़कनाथ अंडे के सेवन के प्रभाव का आकलन करने के लिए कठोर मानव नैदानिक परीक्षण।
- **टिकाऊ कृषि पद्धतियांः** अण्डा उत्पादन दक्षता में सुधार लाने और लागत कम करने के लिए कड़कनाथ कृषि प्रणालियों के अनुकूलन पर अनुसंधान, साथ ही उनके अद्वितीय आनुवंशिक और पोषण संबंधी गुणों को बनाए रखना।
- **उपभोक्ता शिक्षा और बाजार विकासः** कड़कनाथ अंडे के लाभों के बारे में उपभोक्ताओं को शिक्षित करने और प्रामाणिकता और उचित मूल्य सुनिश्चित करने वाले मजबूत बाजार चौनल विकसित करने की रणनीतियां।

निष्कर्षः–

कड़कनाथ के अंडे पोषक तत्वों से भरपूर और कार्यात्मक रूप से लाभकारी भोजन हैं, जिनमें उच्च प्रोटीन, आवश्यक सूक्ष्म पोषक तत्व, कम वसा और एंटीऑक्सीडेंट व प्रतिरक्षा–वर्धक जैसे अद्वितीय स्वास्थ्यवर्धक गुण होते हैं। पारंपरिक चिकित्सा में इनका महत्व, साथ ही स्वस्थ खाद्य विकल्पों के बारे में उपभोक्ताओं की बढ़ती जागरूकता, इन्हें व्यावसायिक अंडों का एक बेहद वांछनीय विकल्प बनाती है। कड़कनाथ के अंडों को बढ़ावा देने से पोषण सुरक्षा और ग्रामीण आजीविका विकास, दोनों में योगदान हो सकता है। भविष्य के शोध में चयनात्मक प्रजनन के माध्यम से अंडों की उत्पादकता बढ़ाने, मूल्यवर्धित उत्पादों की खोज करने और स्वास्थ्य संबंधी दावों का वैज्ञानिक सत्यापन करने पर ध्यान केंद्रित किया जाना चाहिए। संगठित आपूर्ति श्रृंखलाओं की स्थापना और वैज्ञानिक पहुँच के माध्यम से जागरूकता बढ़ाने से उनकी व्यावसायिक क्षमता और वैश्विक पहुँच में उल्लेखनीय वृद्धि हो सकती है। पारंपरिक ज्ञान को आधुनिक वैज्ञानिक जाँच–पड़ताल के साथ जोड़कर, कड़कनाथ के अंडे वैश्विक स्वास्थ्य के लिए एक मूल्यवान कार्यात्मक भोजन के रूप में अपार संभावनाएं रखते हैं।

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IPEMA/Poultry India Supports National AMR Stewardship Drive 2025 at ICAR-NIVEDI, in collaboration with CII-FACE, in Bengaluru

The Indian Poultry Equipment Manufacturers' Association (IPEMA) and Poultry India proudly extended their support to the **'AMR Stewardship Drive 2025'**, organised by **ICAR-NIVEDI (National Institute of Veterinary Epidemiology and Disease Informatics)** in collaboration with **CII-FACE** and **Indian Federation of Animal Health Companies (INFAH)**. The event, held at ICAR-NIVEDI, Yelahanka, Bengaluru, focused on **"Building Partnerships for Strengthening Our Response to AMR"**, and marked a significant milestone in the national effort to combat **Antimicrobial Resistance (AMR)** in animal agriculture.

With ICAR-NIVEDI as the Technical Partner and INFAH as the Knowledge Partner, the inaugural session brought together key voices from government, academia, and industry. The dignitaries released the **CII Report on "Industry-Led AMR Stewardship in Animal Agriculture"**, a landmark publication emphasizing strategic actions to tackle AMR.

During the panel discussion **Mr. Uday Singh Bayas**, **President of IPEMA/Poultry India**, highlighted the vital role of **Poultry India as a prominent platform** for knowledge sharing, industry networking, and driving dialogue on critical issues impacting the poultry sector, such as AMR.

"At Poultry India, we believe in bringing together the veterinary science community, researchers, policymakers, and industry leaders

to deliberate on challenges that affect the sustainability of our sector. AMR is a multifaceted issue—affecting food security, trade, and animal health—and it's only through collaborative platforms like these that we can drive real change," said Mr. Bayas.

He also showcased the **remarkable success of the 16th edition of Poultry India Expo 2024**, which drew unprecedented participation from national and international stakeholders, emphasizing its role as a hub of innovation and knowledge. He warmly invited everyone to attend the upcoming **17th edition of Poultry India Expo**, scheduled for later this year, promising even more engaging technical sessions, knowledge day seminars, and industry-relevant content aimed at fostering responsible practices.

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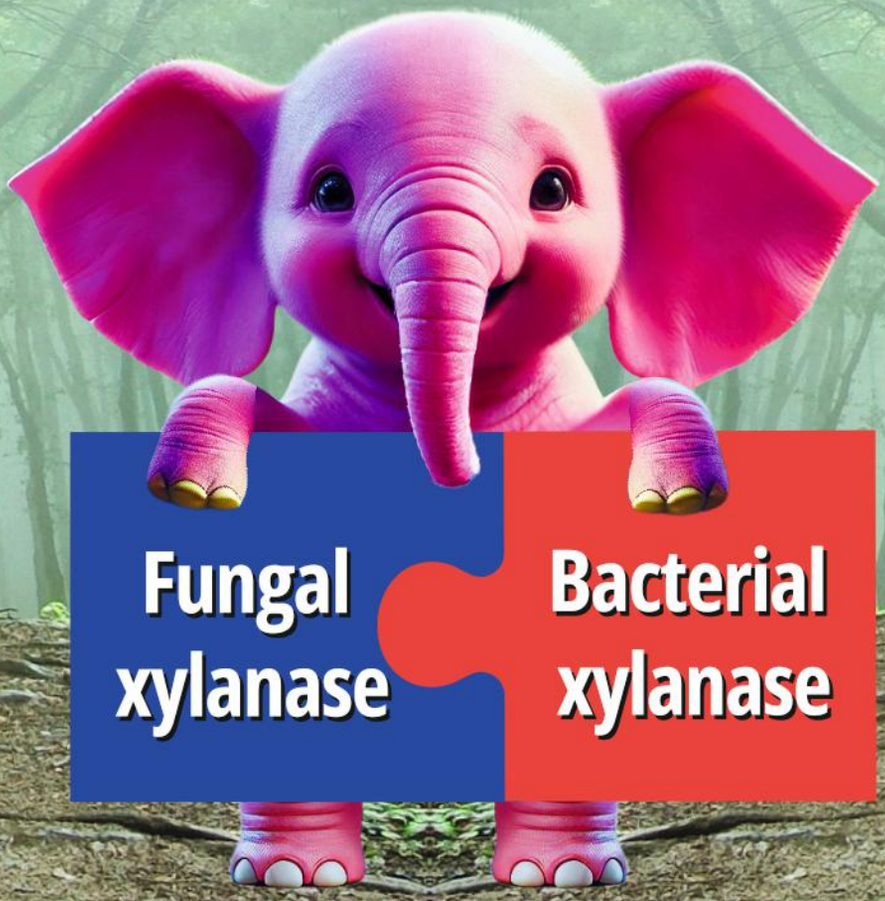

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Key Highlights from the AMR Stewardship Drive 2025

The event underscored the urgent need to:

- Promote responsible antimicrobial use in livestock and aquaculture
- Foster cross-sector partnerships through the **One Health** approach
- Enhance veterinary oversight and farmer awareness
- Strengthen grassroots diagnostics and surveillance
- Scale innovations in alternative therapies
- Build capacity through continuous skilling and stewardship programs

The inaugural session featured distinguished speakers including:

- **Dr. B R Gulati**, Director, ICAR-NIVEDI
- **Mr. Suresh Chitturi**, Chairman, CII Animal Agriculture Committee & MD, Srinivasa Farms
- **Dr. Shirish Nigam**, President, INFAH & MD, EW Nutrition India
- **Prof. (Dr.) P K Shukla**, President, Indian Poultry Science Association
- **Dr. Sindura Ganapathi**, Visiting PSA Fellow, Office of the Principal Scientific Advisor to GoI

Dr. Gulati, in his keynote, emphasized the importance of **multi-stakeholder collaboration**, strengthening surveillance, and aligning with India's **National Action Plan on AMR**, driven by key institutions like ICAR-NIVEDI, NCDC, and ICMR.

Mr. Chitturi highlighted the **projected 312% rise** in veterinary antibiotic usage by 2030 (FAO), warning that unregulated antimicrobial use could lead to disastrous impacts on public health, productivity, and food systems.

Dr. Shirish Nigam elaborated on the **AMR Stewardship Drive 2025** as a multi-city national campaign focused on awareness, training, and engagement at the grassroots—targeting veterinarians, para-vets, fisheries professionals, and farmers.

Dr. Sindura Ganapathi urged all stakeholders to adopt **sector-specific solutions** and integrate stewardship into daily veterinary and farming practices.

Technical Sessions & Youth Engagement

The technical session, moderated by **Dr. Mahesh Patlapati**, Joint Commissioner and Director, Centre of Excellence for Animal Husbandry (CEAH), featured expert talks on:

- **Ethnoveterinary Medicine in AMR Containment** – Prof. N. Punniamurthy
- **Responsible Antibiotic Use & Recording Practices** – Dr. Muralidhar Yegireddy
- **AMR Surveillance in Livestock** – Dr. Shivasharanappa N, ICAR-NIVEDI
- **Industry Preparedness and FSSAI 2024 Amendment** – Dr. Amit Sharma, FSSAI

A **panel discussion** on "Tackling AMR in Animal Agriculture: Industry Perspectives and Practices" was also held, moderated by **Dr. Shirish Nigam**.

In a creative engagement initiative, a **collage-making competition** was organised for students and scholars on the theme: **"Be Antibiotic Smart: The Future is in Your Hands"**.

IPEMA/Poultry India reaffirms its commitment to the AMR cause and continues to serve as a catalyst for innovation, responsible practices, and inclusive dialogue in India's poultry and animal agriculture sectors.

For more information on upcoming activities and Poultry India Expo 2025, visit: www.poultryindia.co.in

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De Heus Inspires Layer Farmers

with precision feeding, early nutrition, consistent quality, and a vision for sustainable farming

De Heus Animal Nutrition, a subsidiary of Royal De Heus Group and one of the world's leading animal nutrition companies, hosted a seminar with the Progressive Layer Farmers in Kurukshetra on Monday, 4th August 2025, which was focused on addressing the importance of nutrition in layer farming, evolving industry trends, major challenges faced by the Layer farmers, and innovative solutions offered by De Heus. The Seminar was led by **Mr. Gerry Oude Elferink,** Director-Poultry Nutrition & Support-De Heus Animal Nutrition Asia. He emphasised on the importance of nutrition during the rearing phase to build the foundation for the production cycle and how the rearing phase is influenced by the development during the rearing phase. He introduced farmers with De Heus' Complete Feed concept for layer farming and talked about their unique Layer Rearing Approach, which is a multi-phase approach focusing on the body weight and uniformity of flocks and results in better performing hens compared to the most common two-phase approach which focuses only on the body weight.

"The Layer Complete Feed Concept is a globally successful concept developed by De Heus and contributes to the higher productivity and prosperity of layer farms across the globe", Mr. Gerry Oude Elferink, Nutrition & Support Manager

"We at De Heus believe in empowering farmers with global knowledge and customized solutions that address their specific challenges while maximizing productivity and profitability.

Our upcoming factory, equipped with world-class machinery, is a step towards setting new standards in feed production. By ensuring even better and consistent quality, it will help farmers enhance productivity and profitability, while strengthening the future of farming.

At the same time, we are committed to sustainability through energy-efficient operations and responsible resource use, ensuring growth that is both progressive and environmentally conscious", **Mr. Amit Mittan,** Commercial Director, De Heus Animal Nutrition India.

The gathering brought together De Heus' team, led by **Mr. Amit Mittan, Mr. Gerry Oude Elferink, Mr. Vander Van, Mr. Parveen Kumar, Mr. Satinder** along with the progressive layer farmers from across Haryana, creating a platform for knowledge exchange and collaboration. The experts shared insights on optimizing layer productivity through advanced nutritional approaches tailored specifically for the regional conditions and challenges and highlighted their research-backed nutritional solutions designed to enhance egg production quality and quantity while maintaining optimal bird health.

The farmers expressed appreciation for De Heus' initiative in organizing this knowledge-sharing platform and shared their on-ground experiences and received personalized recommendations for their operations.

This initiative aligns with De Heus Animal Nutrition's ongoing commitment to **#poweringprogress** supporting the growth and sustainability of the Indian poultry sector through knowledge transfer, quality products, and dedicated technical support.

About De Heus

Royal De Heus is a leading global animal nutrition company, serving actively in more than 100 countries through comprehensive network of strategic partners and distributors. Founded in 1911, De Heus has more than 100 years of experience in providing high-quality nutritional products, premixes and concentrates for livestock. De Heus India has established itself as a trusted partner to farmers across the country, delivering nutritional excellence and technical expertise to help them achieve optimal results.







Two Ingredients are common in all our Products

Honesty & Integrity

Curaliv™ Liquid
Liver Tonic with Growth Promoter

Curaliv™ Plus with Iron

Colistat™ Powder
The Anti *E.coli* Phage Probiotic

Enteroguard™ Powder
The Anti-*Salmonella* Phage Probiotic

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Curaliv™ Herbal
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Nutribact™
Probiotic Powder
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Curaliv™ Powder
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Chick Treat™ Liquid
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Science@Work

Zamira's Annual Kick-Off Meeting: One Team, One Goal

From July 14th to 16th, Zamira brought together its leadership and regional teams at the Corinthian Club in Pune for the much-anticipated Annual Kick-Off event. The gathering set the tone and vision for the next twelve months, bringing the team together for face-to-face collaboration, celebration and strategic planning.

The theme for FY26, **"One Team, One Goal,"** perfectly encapsulates Zamira's commitment to unity and shared purpose. Over three days, the team reflected on last year's successes, identified opportunities for growth, and ignited fresh energy towards achieving ambitious goals.

Zamira's CEO, **Mr. Stewart Cairns**, travelled from Australia to open the event, highlighting the key drivers of last year's achievements and outlining areas for further focus in the year ahead. Reflecting on the importance of the region, he shared:

"South Asia plays a vital role in Zamira's global success. The dedication of our local team, combined with the strength of our partnerships, continues to set the standard for what 'One Team, One Goal' truly means."

A signature feature of the program was its strong focus on **capability-building and innovation**. The program featured a dynamic **sales development session** led by agribusiness specialist **David Faulkner** and Zamira Global Trainer **Jane Enciso**, equipping the team with practical tools and strategies to drive performance in FY26.

This was followed by a series of impactful product and technical training sessions. **Dr. Shailaja Rajyam**, Zamira's Product and Marketing Manager, introduced the company's latest advancements in its **Probiotic range**, further reinforcing the company's reputation as the industry's trusted **gut health experts**. Representing key partners, **Dr. Sujit Kulkarni** from Bextral presented the newly launched **ZamiBoost Immune Defence Liquid**, while **Mr. Vikas Gour** from Celtic Sea Minerals led a compelling session on **ZamiBoost Shell Strength**. These sessions underscored both Zamira's innovation pipeline and the collaborative strength of its strategic partnerships—ensuring the team is equipped with the latest insights to support customers effectively.

On July 16th, the event culminated in the **Channel Partners Forum**—a dedicated occasion to honour the relationships that underpin Zamira's regional success. Each partner received a commemorative memento inscribed with **"Zamira Celebrating 15 Years of Excellence,"** a token of gratitude for their loyalty and continued partnership.

The evening also recognised the **outstanding contributions** of the Zamira South Asia team, with awards presented across both sales and support functions. Each award symbolised the teamwork, integrity, and shared vision that continue to drive Zamira's growth and impact across the region.

Closing the event, **Dr. Shaveta Sood**, Director for South Asia, reflected on the energy and achievements of the week:

"I'm incredibly proud of the South Asia team—their passion, commitment and drive are what power Zamira forward. Special thanks to our innovation partners, distribution network, and the dedicated individuals behind the scenes who made this event possible."

SINCE 1930

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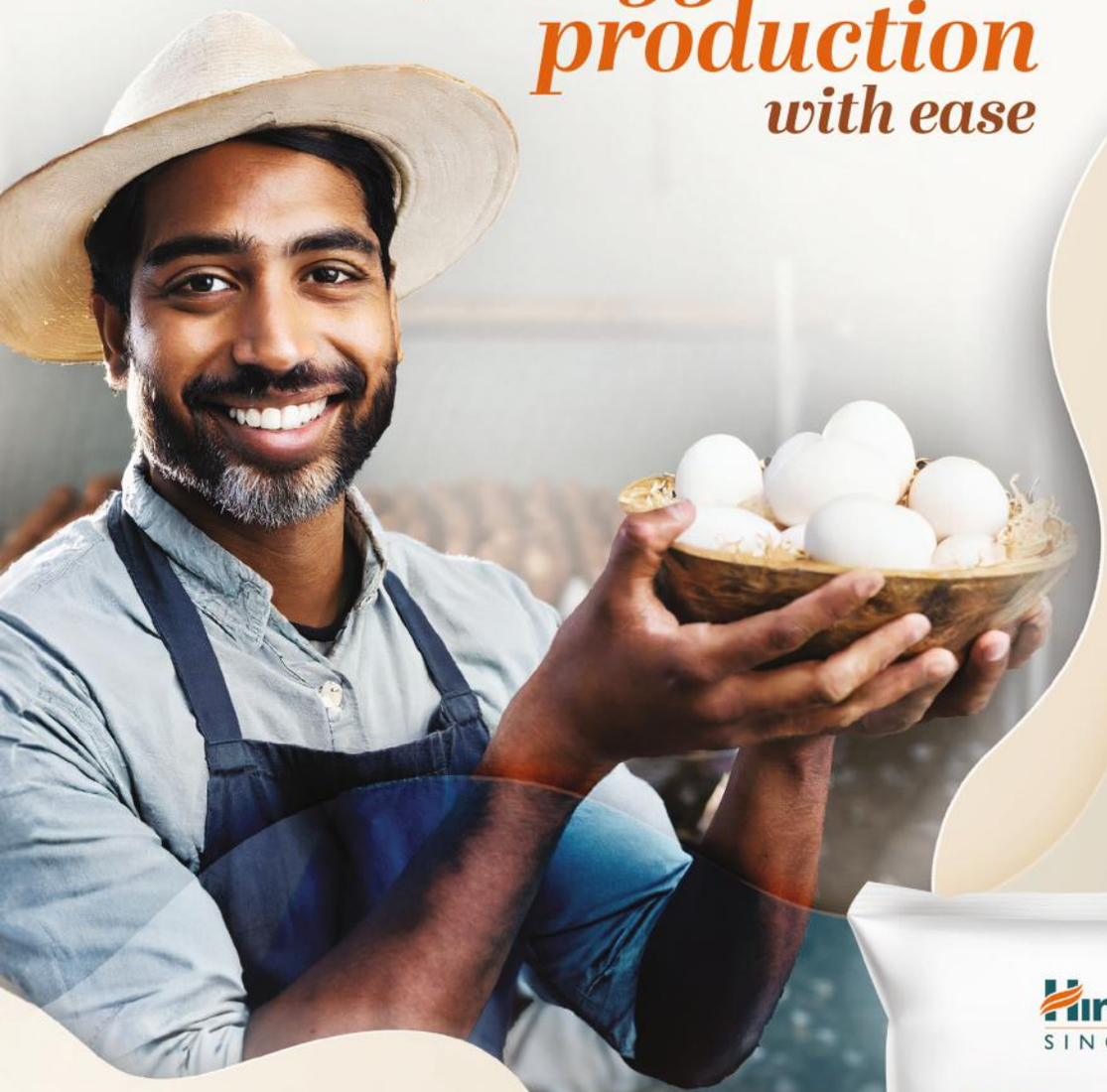

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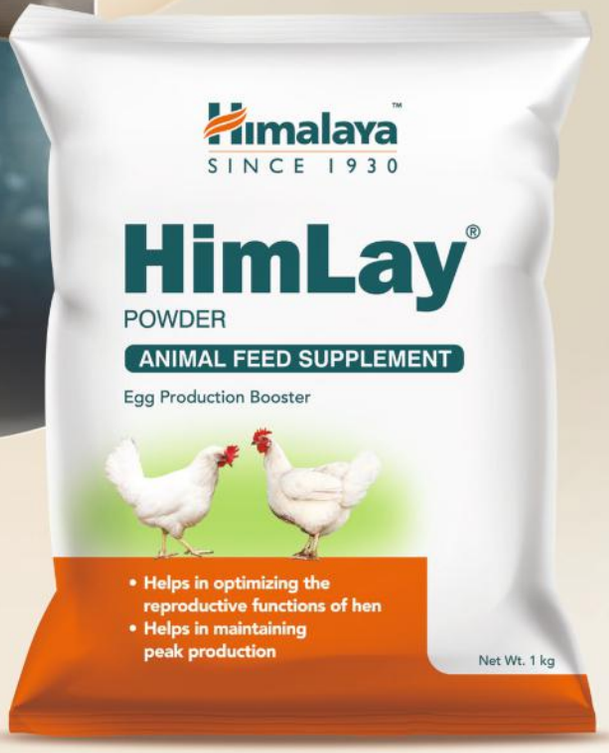

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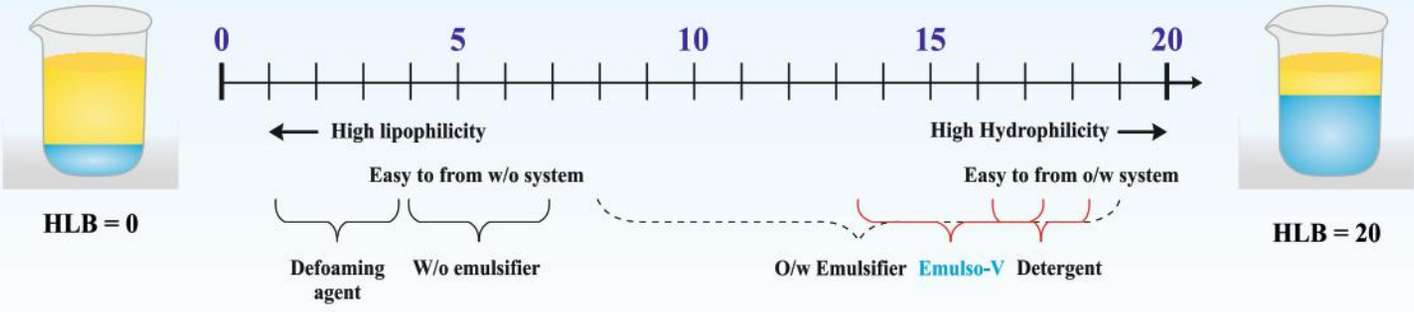

For further information please contact :

VENKY'S (INDIA) LIMITED

ANIMAL HEALTH PRODUCTS DIVISION

An ISO 9001 Certified Company

"Venkateshwara House", S.No.: 114/A/2, Pune - Sinhagad Road, Pune - 411 030 (India)

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Summer Management in Poultry

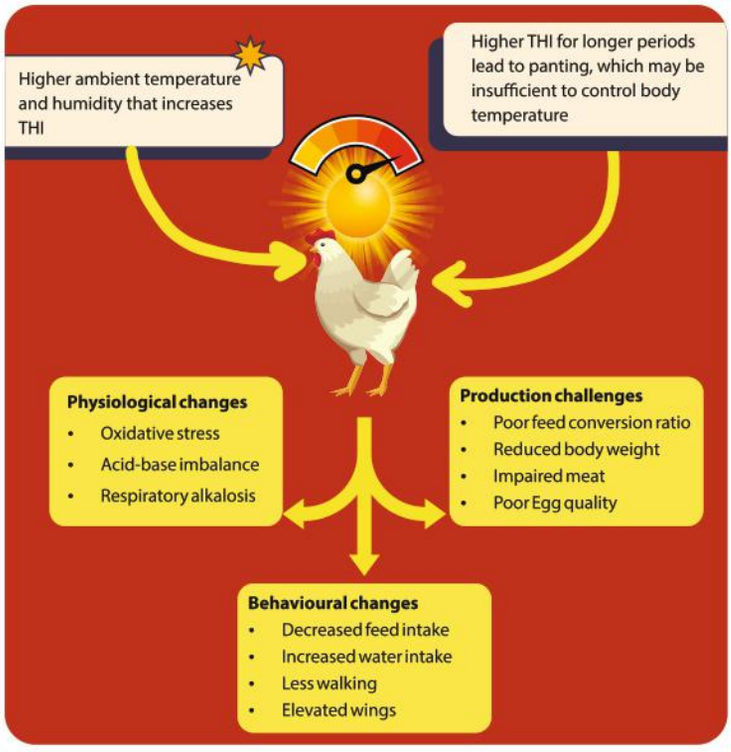
Dr. Akansha Sharma, Sr. Executive (Technical)

The summer season brings with it a great challenge for the poultry. Wtih the problem of rising global temperatures the flocks shall become more vulnerable to heat stress. The physiological mechanism of poultry is such that the birds are susceptible to high environmental temperature owing to an absence of sweat glands that lower heat dissipation, a full body of feathers, higher body temperature, and the fatty nature of the birds.

The rise in ambient temperature during summer not only lowers poultry performance but also leads to immunosuppression issues, which can result in disease outbreaks and cause heavy mortality. Male poultry birds are found to be more prone to heat stress than females. Summer stress not only affects broiler performance, but it is also an important stress factor that is responsible for immunosuppression and has been known to be responsible for heavy economic losses among poultry farms.

Understanding THI: A Key Indicator in Managing Poultry Heat Stress

The thermoneutral zone refers to that temperature range where the bird is in a state of physiological comfort and there is a balance of energy resources. The normal thermoneutral zone for poultry falls between 60°F and 75°F. The Temperature Humidity Index (THI) is an important indicator for thermoneutral zone.

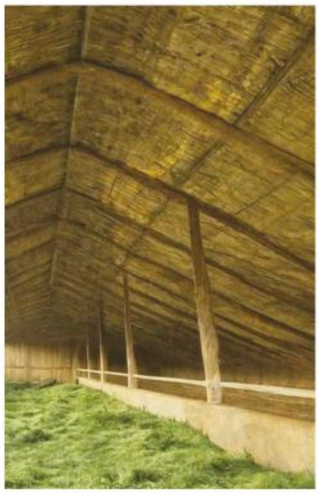


Water management

- Water consumption increases significantly during summer. Normally, the feed-to-water consumption ratio is 1:2, but when temperature exceeds 95°F (35°C), this ratio may increase to 1:4 or more.
- Provide plenty of clean and cold water.
- Use good-quality sanitizers for water treatment.

- Increase the number of waterers by 25-30%.
- Cover water tanks with wet gunny bags to keep water cool.

Housing management



- Thatching the roof with green grass or agricultural waste can help reduce shed temperature.
- Whitewashing the roof with lime helps mitigate the temperature inside the shed.
- Applying sprinklers above the shed.
- The use of gunny bags on the side walls (grill) of the shed over which drip water is set.
- Provide 4-6 feet of roof overhang to protect birds from direct sunlight.
- Provide ridge ventilation to help remove hot air from inside the shed.

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22 Field Trials*

1,08,236 broiler chickens

Safe | **Performance booster** | **Anti-infective** | **Anti-inflammatory**

40 -70 points#

Improvement in cFCR

Upto 70 g

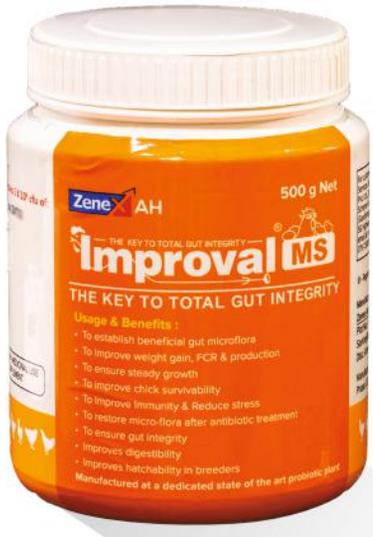
Improvement in BWT in open shed

Upto 120 g

Improvement in BWT in EC shed

Upto 30%

Improvement in livability vis-à-vis antibiotic control



#1 FCR point represent third/last decimal point of 1000

*Majority of field trials were conducted at same farm with multiple sheds in integrations across various geographical locations and at different time of the year. Some of the integrators were generous in sharing complete production indices while others communicated the summary of the trial results. In the field trials, Improval MS was compared with antibiotic/probiotic/antibiotic + probiotic/probiotic + prebiotic control. Detailed reports availble on request.

General management

- Fresh litter of 2" thickness with racking or stirring of litter 2-3 times a day during cool hours is recommended
- Overcrowding of birds should be avoided.
- Shifting, transportation, de-beaking and vaccination should be done during the night or cool hours of the day.
- Birds severely heat-stressed may be dipped in cold water for 2-3 minutes keeping their neck and head above water level.
- Use foggers in the shed which could reduce the shed temperature up to 5-10 degrees depending upon quality.
- The use of paint, white lime, etc. practically reduces the shed temperature by up to two degrees

Feed management

- Offer feed during the cooler part of the day (early morning and evening) only.
- Feed supplements like Vitamin C, E, B2, B6, B12 and trace minerals should be given.
- 20- 30% extra vitamins and trace minerals should be added to feed.
- The addition of ammonium chloride, potassium chloride, and sodium bicarbonate improves the performance of broiler birds.
- Supplementation of essential herbs like Ocimum sanctum, Withania somnifera, Emblica officinalis & minerals has proven to reduce heat stress.

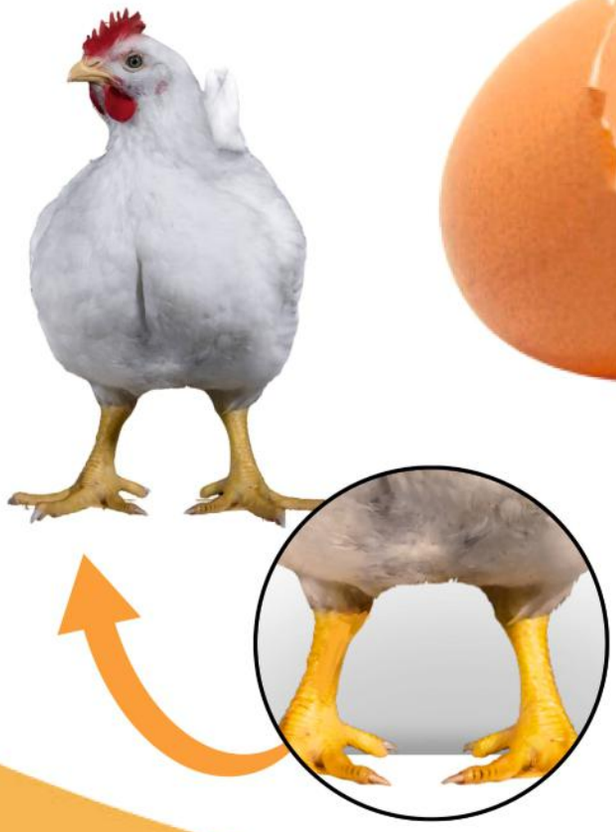
Vitamin C-rich diet : Vital weapon in summer management

Any stressors like heat stress may increase the chickens' need for vitamin C since chickens are not able to synthesize enough vitamin C to meet increased physiological demands. Vitamin C plays a crucial role in amino acid & mineral metabolism and the synthesis of some hormones.

Herbal solutions for effective summer management in poultry:

Ayurvet' s Ayucee and Stresroak are polyherbal formulations containing natural Vitamin C, bio-flavonoids, and herbs respectively which are known for their antioxidant & free radical scavenging activities. The herbs present in **Ayucee** and **Stresroak** like Phyllanthus emblica, Withania somnifera, and Ocimum sanctum possess antiviral, immunomodulatory & anti-lipid peroxidation properties which are responsible for countering the deleterious effects of heat stress and enhancing stress threshold to maintain fertility, hatchability, and immunity.

Natural Shield Against Poultry Heat Stress



Helping nature to show its true colours

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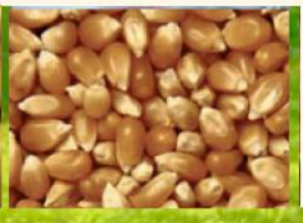
For the most **active** pigmentation



itpsa

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7a planta , Barcelona SPAIN

Contact :Dr.Sameer Sawant

Mobile number: +91 9820282842

Legend SERIES 19

In our journey we visited many faces with our poultry industry legends, and one among them is

Dr. D.K. Dey

Executive Director
Immeureka Animal Health Pvt. Ltd.

iMMeureka™
The art of science

1. **Where are you from?** I am an Indian. Originally hail from Jamshedpur, now settled in Hyderabad, the Poultry Capital of India.
2. **What is the best thing you like in your journey?** Meeting people, interacting with them. Long back during my Intervet day's one of the international colleague informed me that People's emotions are same, globally. There can be sociocultural differences but emotions are same.

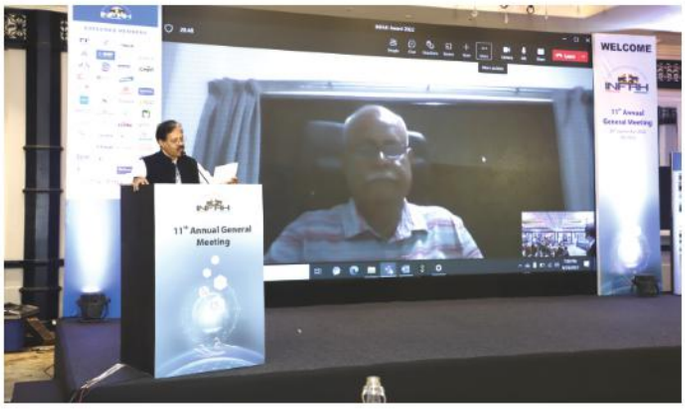
   This is the greatest truth I have realized, best part of my journey.
3. **What is the right motivation you like in the journey from starting till now?** I have never been a great student during my academic days. However my life has taught me that " motivation to do good whatever you do " is the best mantra of success. It is not necessarily true that only toppers reach highest in professional life.

   Giving best, being a team member, learning from mistakes are my motivation.
4. **Why you choose the Poultry / Livestock profession?** Honestly speaking we did not have much choice during student life, like most I too tried medical entrance, Veterinary science was second option. However once we enrolled in Veterinary science- no looking back. My quest for meeting people across the globe, travelling brought me to this profession.
5. **As compared to other big players in the industry, how is your organisation different?** I have a fascination of creating new. First Poultry division of Hoechst in India was created under my leadership.

My knowledge of Vaccine business- techno commercial, regulatory was strengthened during Intervet days, this gave me confidence to create Globion- that too with a JV with Lohmann Animal Health.

With this proven track record- Immeureka Animal health (new start up Company) was created. It is different because Immeureka invest heavily on research-for vaccine and feed additives business to cater international market.

6. **Please tell us about your family.** I am married to Ila and we have a beautiful daughter Protyusha . Both Ila and Protyusha are powerful decision makers of our family.



7. **What you think about your organisation's roadmap of next 5 years?** We are setting up a Vaccine manufacturing unit in Tumkur, Bangalore. Considering the long gestation period of such projects I feel that a 10 year roadmap will be appropriate. We want to cater to Poultry and Comanion animal segment in all speciality health care solutions, vaccines.
8. **What is your message to the next generation entering this business?** The next generation realises that Indian Animal health sector has a potential to become Global leader- as pharma sector has become pharmacy of world . The new generation entrepreneurs should realise that India imports almost 82% API from China. So just formulation and trading is not the option. They have to invest in Infrastructure, R&D , process development duly supported by regulatory and marketing activities. With this we can create many Indian multinationals. Trust me acceptance of our products are high in international markets, but shortcuts is not an option.
9. **What are your favourite eatery food?** I love Chicken and Fish. Of course I love drinking with good Companion.
10. **What are your hobbies?** My hobby is reading and listening to music .

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

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Immunomodulators in Poultry:
Tool for Immunity Optimization and Profitable Poultry Production

Dr Pradip A Naik,
Species Expert
Broiler & Broiler Breeders-SA

In the dynamic landscape of poultry production, maintaining optimal immune function in poultry is critical for health, performance, and profitability. Immunosuppression, vaccine failures, and emerging pathogens continue to threaten productivity and profitability. With increasing pressure to reduce antibiotic use, improve disease resistance, increase vaccine efficacy, and support overall flock health, immunomodulators have emerged as a promising tool. Understanding avian immunology and leveraging effective immunomodulation strategy has become more important than ever.

Basic Avian Immunology

The immune system in poultry is a complex and dynamic defence network that protects against pathogens while supporting growth and productivity.

Birds possess a complex immune system composed of innate and adaptive components. The innate immune system provides immediate, non-specific defence through physical barriers, phagocytic cells (like macrophages and heterophils), and soluble factors. The adaptive immune system, which develops over time, includes B-cells (producing antibodies) and T-cells (mediating cellular immunity), maturing in the Bursa of Fabricius and thymus, respectively.

Key immunity challenges in Broilers

Poultry have relatively underdeveloped immune system at hatch which makes early-life immunity development critical. With a short lifespan of 35–45 days, broilers rely heavily on maternal antibodies and early vaccination. Rapid muscle development can divert nutrients away from immune development, increasing susceptibility to disease. Also environmental, nutritional, and management stressors can quickly suppress immune function in broilers.

Environmental stressors such as high ambient temperatures, poor ventilation, and fluctuating humidity levels are common in poultry houses, especially during summer and monsoon seasons. These stressors impair immune responses and increase susceptibility to infections.

High pathogen load such as Infectious Bursal Disease (IBD), Newcastle Disease (ND), Chicken Anaemia Virus (CAV), Inclusion Body Hepatitis (IBH), Reo Virus and Low Pathogenic Avian Influenza (LPAI) remain prevalent and continues to cause immunosuppression even in vaccinated flocks. Additionally, parasitic infections like coccidiosis and bacterial infections can become more prevalent when the immune system is supressed.

Key immunity challenges in Layers & Breeders

Layers face long-term exposure to pathogens such as viral, bacterial, and parasitic infections over their lifespan. Stress from production cycles, peak laying periods, molting, and feed changes can suppress immunity.

Respiratory Diseases such as Mycoplasma *gallisepticum*, Infectious Bronchitis, and Infectious laryngotracheitis (ILT) are common in layers. Newcastle Disease, LPAI are also major threats for optimum layer bird productivity. Limited mobility and high density can elevate stress hormones, reducing immune responsiveness. Inadequate levels of vitamins (A, E, D3) and trace minerals (Zn, Se) impair immune function and vaccine response.

Broiler breeders encounter dual stress of growth and reproduction. Balancing body weight and reproductive performance can strain immune resources. In case of breeders, there is a potential risk of vertical disease transmission like *Salmonella*, *Mycoplasma*, and *Avian Reovirus* from parents to progeny. Breeders receive extensive vaccination schedules, which can cause temporary immuno-suppression if not managed properly. High mycotoxin levels in the feed can affects egg quality, antibody production, and maternal antibody transfer.

Other important factors contributing to lower immunity in Broiler, Breeders & Layers

Mycotoxin contamination in feed is a silent but significant contributor to immunosuppression in broilers. In tropical and subtropical climates, feed ingredients are highly susceptible to contamination, especially with aflatoxins, ochratoxins, fumonosins, deoxynivalenol (DON), and zearalenone (ZEA). Even at subclinical levels, these toxins can significantly impair the immune system of broilers.

Mycotoxins can have several impacts on different organs which impact immunity.

- Upon ingestion, the intestinal epithelium can be damaged, increasing intestinal permeability and therefore opportunity for bacterial infections.
- Lymphoid organs like the Bursa of Fabricius, thymus, and spleen can atrophy which reduce development of B- and T-lymphocytes compromising both humoral and cell-mediated immunity.
- Phagocytic activity of macrophages and heterophils can also be suppressed leading to reduced production of cytokines and interferons, weakening the first line of defence by impairing innate immunity.
- The liver is affected which can reduce the ability to produce acute phase proteins, an important aspect of innate immunity.

Because of these impacts due to mycotoxins, the response to vaccines can be impaired mainly in the production of antibody titers post-vaccination (e.g., ND, IBD). Antigen presentation is a key step in the production of antibodies and memory immune response which can be impacted by mycotoxins. Mycotoxins induce reactive oxygen species (ROS), damaging immune cells and tissues.

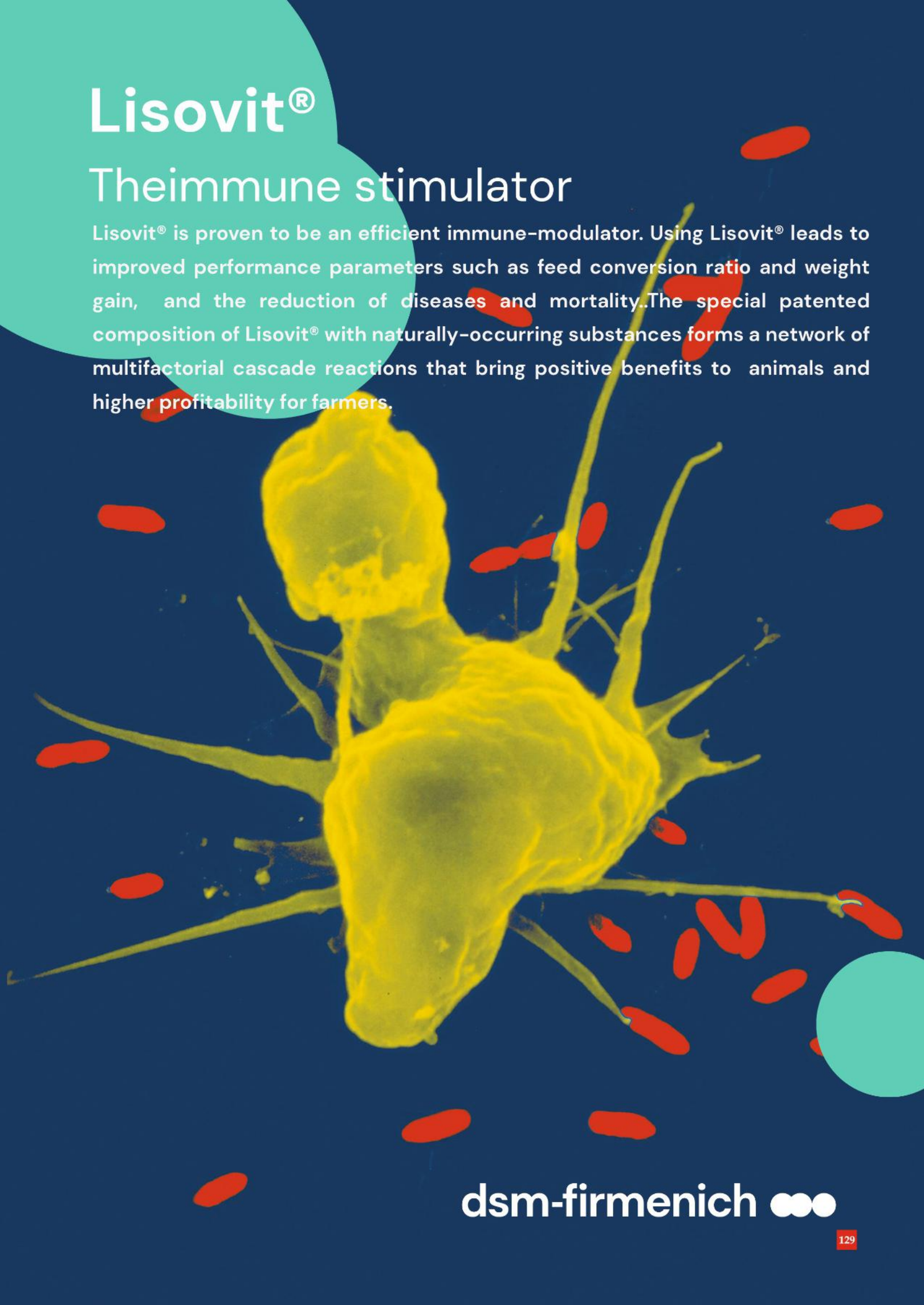
Other considerations for poor immune status are:

- Depletion of antioxidants like vitamin E and selenium
- Heat stress condition increasing corticosterone levels suppresses lymphocyte proliferation and antibody production; oxidative stress can be increased which can cause cellular damage if left unchecked
- Poor ventilation leads to an accumulation of ammonia, carbon dioxide, and dust particles. Ammonia damages the respiratory epithelium, impairing mucosal immunity. Chronic exposure reduces macrophage activity and increases inflammation.
- High humidity promotes pathogen proliferation and mycotoxin production in litter and feed. Low humidity dries out mucosal surfaces, reducing barrier protection.

Lisovit®

Theimmune stimulator

Lisovit® is proven to be an efficient immune-modulator. Using Lisovit® leads to improved performance parameters such as feed conversion ratio and weight gain, and the reduction of diseases and mortality..The special patented composition of Lisovit® with naturally-occurring substances forms a network of multifactorial cascade reactions that bring positive benefits to animals and higher profitability for farmers.



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Summary: Impact of Low Immunity in Poultry	
Poultry Type	Key Impacts of Low Immunity
Broilers	- Increased disease outbreaks (e.g., IBD, coccidiosis)
	- Poor vaccine response
	- Reduced growth rate and FCR
	- Higher mortality and medication costs
Layers	- Chronic infections affecting egg production
	- Poor shell quality and egg hygiene
	- Increased culling due to disease
	- Long-term productivity loss
Broiler Breeders	-Reduced fertility and hatchability
	- Poor maternal antibody transfer to chicks
	- Higher risk of vertical disease transmission
	- Reproductive and systemic health issues

Holistic approach to overcome immunity challenges in poultry

- **Biosecurity**: Strict hygiene, controlled farm access, and disinfection protocols.
- **Nutrition**: Use of immunomodulators, probiotics, and mycotoxin mitigation strategies to support gut health and immune function.
- **Monitoring**: Regular serological and performance monitoring to assess vaccine response and flock health.
- **Mycotoxin Management**: Regular feed testing and use of broad-spectrum toxin binders. Critical for all poultry types to prevent immunosuppression and gut damage.
- **Vaccination strategy:** Broilers: Early-life vaccination with proper timing and handling. Layers & Breeders: Comprehensive vaccination schedules with booster doses and serological monitoring
- **Stress Reduction:** Minimize handling, overcrowding, and transport stress. Reduce heat and cold stress to prevent immune suppression.

The use of immunomodulators in poultry feed and drinking water has become increasingly popular as a way to address issues related to low immunity.

What Are Immunomodulators?

Immunomodulators are substances—natural or synthetic—that modify the immune response. In poultry, they can either stimulate (immunostimulants) or suppress (immunosuppressants) immune activity, depending on the desired outcome. The goal in poultry production is to enhance immune competence without triggering chronic inflammation or metabolic stress.

Lysozymes, oligosaccharides, probiotics and prebiotics, phytochemicals, herbal extracts, beta-glucans and polysaccharides, vitamins and trace minerals, yeast cell wall components are some of the examples of immunomodulators used in poultry.

Mechanisms of Action

Immunomodulators work through multiple pathways:

- **Enhancing innate immunity**: Stimulating macrophages, heterophils, and natural killer cells.
- **Boosting adaptive immunity**: Improving antibody production and T-cell responses.
- **Modulating gut microbiota**: Supporting a healthy gut environment, which is closely linked to systemic immunity.
- **Reducing oxidative stress**: Antioxidants protect immune cells from damage during infections or vaccination.

Lysozymes are antibacterial enzymes that produce immunostimulant effect. They can cleave peptidoglycans of bacterial cell walls producing peptidoglycan fragments which are recognized by antigen presenting cells (i.e. macrophages and dendritic cells) which can have a priming effect allowing for greater immune activation which can be especially helpful for vaccination response. Lysozymes can also form pores within bacterial cell walls due to their cationic nature causing osmotic imbalance and eventual death.

Depending on the oligosaccharide, it can either be a food force for bacteria or can be a signalling molecule for specific pathways of the microbiome. This can lead to an increase in bacterial population or diversity or a change in behaviour of the microbiome.

Plant extracts comprising number of active substances entail adaptogenic (antistress) and immunostimulant properties. Plant extracts stimulate cellular immunity through phagocytic activity of macrophages, lymphocytes genesis and T- cell activity. Several phytogenics also have antibacterial properties.

Vitamins and minerals are essential for several biochemical reactions within the body as many of them are catalysts in enzymatic reactions necessary to keep proper physiological function. Some of them have additional functions like antioxidant properties (Zn, Se, Vitamin E) that are crucial for immune function.

Benefits of Immunomodulators in Poultry Production

The strategic use of immunomodulators offers several advantages:

- **Improved vaccine response**: Birds show higher antibody titers and better protection against diseases like ND, IBD, and IB.
- **Reduced disease incidence**: Enhanced resistance to bacterial, viral, and parasitic infections.
- **Better growth performance**: Healthier birds exhibit improved feed conversion ratio (FCR) and weight gain.
- **Lower antibiotic usage**: Supports antibiotic-free production by reducing the need for therapeutic interventions.

Table 1: Feed conversion ratio (FCR), mortality rate, and geometric mean haemagglutination inhibition (GMHI) titres against Newcastle disease vaccine (A. Qayyum *et al.*, The Journal of Animal & Plant Sciences, 22(1): 2012, Page: 11-14) ISSN: 1018-7081

		Performance on day 42		GMHI titres days after Vaccination		
Groups		FCR	Mortality %	3	13	23
A	Control	1.9	29.97^{c}	7.29^{a}	33.51^{a}	12.69^{a}
B	Lisovit®	1.85	13.3^{b}	7.99^{a}	185^{b}	84^{b}
C	Lisovit®	1.82	2.2^{a}	8.00^{a}	244^{c}	140^{c}

Table 2: Feed conversion ratio (FCR), Mortality rate, and geometric mean indirect haemagglutination (GMIHA) titres against infectious bursal disease vaccine (A. Qayyum *et al.*, The Journal of Animal & Plant Sciences, 22(1): 2012, Page: 11-14)

		Performance on day 42		GMHI titres days after Vaccination		
Groups		FCR	Mortality %	0	10	20
A	Control	1.9	29.97^{c}	5.27^{a}	35.09^{a}	29.11^{a}
B	Lisovit®	1.85	13.3^{b}	5.03^{a}	255.19^{b}	101.56^{b}
C	Lisovit®	1.82	2.2^{a}	5.54^{a}	387.01^{c}	121.77^{c}

(Note: The birds were vaccinated against ND on day 3 (intraocular) and day 18 (drinking water) of age by using Lasota strain and against IBD on day 8 (intraocular) and day 21 (drinking water) of age by using pathogenic strain. Group A served as control, while birds of groups B and C were offered Lisovit® at the dose rate of 100 and 200 mg/kg body weight (b.wt.), respectively on days 22, 24 and 26 of age.).

*Lisovit® contains lysozyme, immune stimulating herbal extracts and vitamins C and E.

Conclusion

The immunity challenges in broilers, layers, and breeders are multifactorial and dynamic. While vaccines remain essential, their success depends on proper implementation and integration with broader health management strategies. Immunomodulators role in enhancing immunity, reducing antibiotic dependence, and improving overall flock performance is becoming increasingly vital for healthier, more resilient birds. Immunomodulators are not a replacement for good management, biosecurity, or vaccination—but they are a powerful complement. When used strategically, they help poultry producers meet the demands of modern farming, healthier birds, better performance, and more sustainable production.

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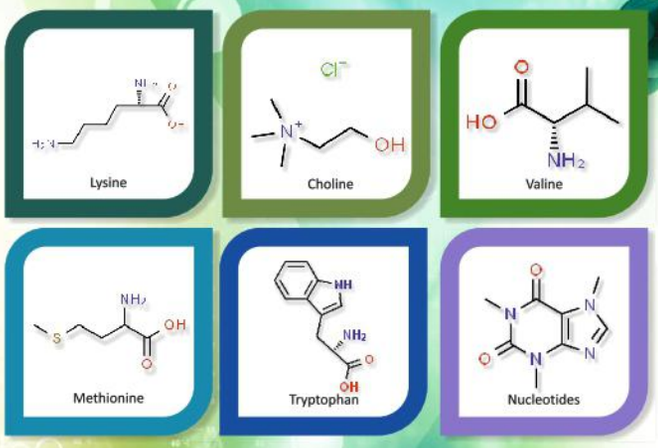

To achieve high efficiency poultry farming, a finely balanced feed formula with high bioavailability of feed nutritional fractions especially of critical ingredients including limiting amino acids, trace minerals etc., are required. To attain this balance, supplementation becomes extremely crucial to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

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Mahasangamam
Together for a Better Tomorrow 2025

A Memorable Meet for Poultry Minds at Mahabalipuram

Provet successfully hosted **Mahasangamam 2025,** a three-day conclave held from 8th to 10th July 2025 at Welcomhotel by ITC Hotels, Kences Palm Beach, Mahabalipuram. The event was organized under the visionary leadership of Dr. V. Muthu Selvan, Managing Director and Dr. S. Senthil, Director, bringing together leading poultry consultants, nutritionists, and industry professionals from across the country.

Held under the theme **Together for a Better Tomorrow** , the conclave focused on the current challenges in the poultry sector and explored innovative, sustainable solutions for the future of poultry production.

Honouring the Experts

As a token of respect and appreciation, all the esteemed guests were felicitated during the event for their valuable contributions to the poultry industry. Their presence added great value and meaning to the entire program.

Knowledge-Driven Technical Sessions

The highlight of **Mahasangamam 2025** was the technical session, moderated by **Dr. P.K. Shukla** (Ex - Dean, Mathura Veterinary College & Former Joint Commissioner-Poultry, GOI). The session featured four thought - provoking presentations that received overwhelming appreciation from the attendees:

Dr. Jayaraman. K (Poultry Consultant) presented ***"Evolving Disease Challenges Management and Risk Mitigation"***, sharing practical field strategies for disease forecasting and control.

Dr. Chandrasekaran. D (Professor & Head, Retd., Animal Nutrition) spoke on ***Building Immunity through Feed Nutritional Immunomodulation and Gut Resilience,*** emphasizing gut health as a cornerstone of performance and disease resistance.

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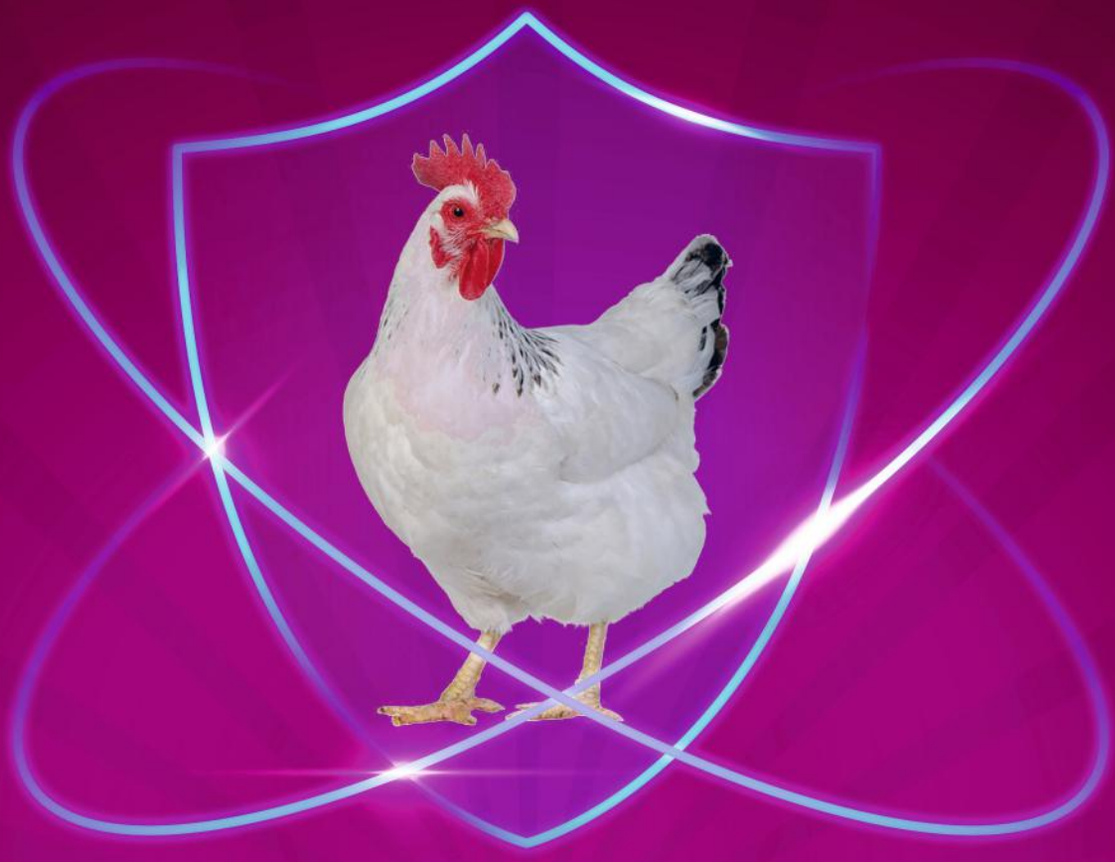

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Dr. Sudipto Haldar (Director, Agrivet Research & Advisory Pvt. Ltd.) delibrated on ***"Antibiotic-Free Poultry Production in the Era of AMR: Debunking Myths and Advancing Science"***, urging a balanced, evidence-based approach to antibiotic alternatives.

Dr. Tiago Prucha (Consultant-Vetworks, Belgium) enriched the dialogue with ***"Insights and Emerging Trends in Natural Growth Promotion"***, aligning with global shifts toward sustainable poultry practices.

Each presentation fostered insightful discussions, reinforcing the need for integrated approaches and scientific precision in modern poultry management.

Blending Culture & Networking

Beyond its technical strength, **Mahasangamam 2025** offered a vibrant mix of cultural experiences, wellness activities, and scenic excursions that allowed attendees to relax, connect, and rejuvenate:

A traditional welcome and heritage evening set the tone on Day 1, celebrating Indiæs rich culture.

A well organised and thoughtful Technical Session followed by world tour-themed networking gala dinner event evening on Day 2 was remarkable.

Zumba session in early morning followed by Mahabalipuram exploration and bonding over the lunch @ Seanz Cruise, Mutukadu Boat House on Day 3, made the event both memorable and rejuvenating.

Together for a Better Tomorrow

Mahasangamam 2025 was not just a meetingit was a celebration of knowledge, unity, and future possibilities. Provet once again reaffirmed its commitment to innovation, learning, and building lasting partnerships in the poultry industry.

Dr. Sulav Chetia, GM Marketing and Technical Services and the entire Provet team expressed heartfelt thanks and appreciation to all the consultants and guests for taking their time to attend and active participation. Their support made the event a grand success - both in spirit and outcome.

Mahasangamam
Together for a Better Tomorrow 2025














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Getting Amino Acid Levels Right Could be Key to Unlocking Modern Broiler Potential

Poultry genetics has evolved rapidly in the last 2 decades and continues to advance at a steady pace, but research from Cargill Animal Nutrition suggests that birds' diets need to be updated alongside genetic progress to maximize performance.

With modern broilers often bred for cut parts such as legs, breasts and tenders, there have been significant transformations in the physiology of the birds toward higher muscle and lower fat. This has come alongside improved feed conversions and birds hitting target weights several days before they were doing even a few years ago, explained Jarred Oxford, PhD, a poultry nutritionist for the company.

Although there are other factors involved, such as improved feeding technologies and environmental controls, selection for higher meat yield at a faster pace has required notable shifts in broiler nutrition, with amino acids a key part of these changes. This has reflected the fact that research has highlighted the importance of formulating diets based on an ideal-protein measure rather than a crude-protein measure, Oxford noted, prioritizing birds' amino acid requirements.

"What we've seen is roughly a 50-kilocalorie reduction in energy from 2007 to 2022. We've also seen a reduction in crude protein, but at that same point, we've seen an increase in amino acids," he said.

"We've seen a five-point increase in digestible lysine. We've also seen an increase in the ratios of our total sulfur amino acids (methionine and cysteine) and non-sulfur amino acids (threonine and valine). Overall, we're feeding a lot more amino acid-dense diet than we were."

Breed matters in honing diets

Cargill research highlights not only that amino acids have a higher impact on feed intake than previously thought, but also that different bird breeding lines respond differently to dietary amino acid levels.

One study showed that for a breed commonly raised in production, feeding the birds excess lysine resulted in a reduction in feed intake, with the opposite being true when lysine was reduced. For the other breeds tested, a reduction in dietary lysine had the opposite effect, causing feed intake to decrease.

"This indicates to us that the genetic selection pressure is different between the two lines, meaning that although they've both selected for better feed efficiency and more breast-meat yields, the criteria that they've been selected for to achieve that were different," Oxford explained. "We need to adjust our feeding programs to reflect the birds that we're feeding."

Exploring energy-lysine interaction

Other work suggests that the old poultry-industry adage that birds eat and grow to an energy requirement may need to be updated, considering genetic changes in the animals, Oxford continued.

Tests have shown that average daily gain is more influenced by dietary lysine levels than energy levels in birds' diets, while birds fed sub-optimal levels of dietary lysine will regulate their feed intake, eating more to achieve their lysine requirement.

"The assumption that chickens eat to meet an energy requirement may not be so true anymore, at least for today's broilers," he noted.

Based on the experimental results, he believes there is a clear case for lysine-to-energy-level ratios in modern broiler diets. However, at present, while this is commonly seen in swine production, it is rarely done in the poultry industry.

Broiler breeder nutrition may need rethinking

For modern broiler breeders, which have also been bred for greater muscle deposition and reduced fat, energy levels have been kept relatively constant in birds' diets over the last 15 years, while lysine has increased. Much more of the lysine is allocated to egg production1 by the birds compared to energy, which is mainly allocated to maintenance.2

This nutritional shift has meant the protein-to-body-fat ratio has increased significantly over the years, but birds with low body fat have reproductive risks, Oxford explained. Two Cargill studies explored these nutritional impacts, finding that it might be time for producers to reconsider their feeding approaches.

One test was a dose-response trial with broiler breeder pullets using six digestible lysine and crude-protein levels during the rearing period, with birds' target weights achieved by adjusting feed allowance.3 The research team monitored the birds to lay, at which point they fed the birds identical diets. They then took eggs from the birds in the study and hatched them to assess the performance of their progeny.

They found that the birds fed the lower crude protein and lysine about the energy required less feed intake during the lay period to maintain their bodyweight at the target level. The highest laying percentage was in the group fed a diet containing 10% less crude protein and lysine-to-energy as pullets than a standard diet. Additionally, progeny from broiler breeders in the same group had improved daily gain.

"Even though these diets were only fed in the pullet phase, there is an effect on the progeny during the laying phase," Oxford noted.

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1 Data on file, Study Report No. B815R-US-18-A46, Zoetis Inc.

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Shifting diets in late lay

For the second trial, they compared a standard feeding program to one in which digestible lysine and crude-protein levels were gradually decreased toward the end of lay, from week 35.4. They also took eggs from the breeders at 56 weeks of age and hatched them to measure progeny bodyweights on day 1 and day 35 of their lives.

The team observed that birds' average daily feed intake was significantly higher in the reduced crude-protein and lysine group after 46 weeks. While there was no difference in egg production, egg weights were significantly lower in birds fed reduced crude protein and lysine, again from 46 weeks.

After hatching the progeny, the scientists saw that chick weights were significantly lower in the reduced crude-protein and lysine group, both at day zero and day 35. At the latter time point, this represented around a 60-gram difference.

"We know that growth is exponential from hatch weight, so it makes sense why we're seeing this trend," Oxford said.

Age matters in tailoring amino acids

Together, the studies illustrate that the age of birds is critical in determining optimum amino acid levels. By slightly reducing amino acid levels in pullet diets, carcass fat can be increased along with persistency of lay and improved growth potential of progeny. However, in later lay, reducing amino acids can have the opposite effects: increased demand for feed and reduced egg weights and progeny growth.

"We need to look more into our programs. We know that these birds, as they mature, change physiologically, so that birds' requirements are going to change too," Oxford stressed. "Currently, we're holding breeder diets relatively constant throughout the lay phase, so you're feeding a similar diet for roughly 40 to 45 weeks. We need to tailor that program to better reflect that bird's requirements as they age and potentially add additional breeder diet phases."

Improving knowledge and feed delivery

Further understanding of optimum broiler breeder body condition at the onset of lay and as the bird ages is also needed, he noted, particularly around optimal fat levels. Here, there are insights from work with layers, in which near-infrared scanners are used to scan fat pads and ultimately help tailor diets to improve persistency of lay. Epigenetic approaches could also be helpful to further improve broiler growth and development and lead to changes in broiler breeder feed.

"Genetics are changing roughly every 2 to 3 years, so we need to stay dynamic to achieve the full genetic potential of our birds," Oxford said.

"It's important to understand the genetic changes that have been made and how that may influence nutrient requirements or even the birds' physiology. This can help us make improvements to our breeder nutrition programs."

To further aid the efficacy of feeding programs and flock uniformity, more attention is also needed around feed delivery.

"You could have the best diet in the world, but if your feed delivery isn't right, then it's not going to perform like the best diet in the world. The birds aren't going to be able to utilize it the way they should. That's key, especially in broiler breeders," he added.

"I think we could spend more time looking at how our feed-delivery system is functioning and adjusting our feed run times to make sure that we're getting enough feed out, as well as getting a uniform presentation to the birds."

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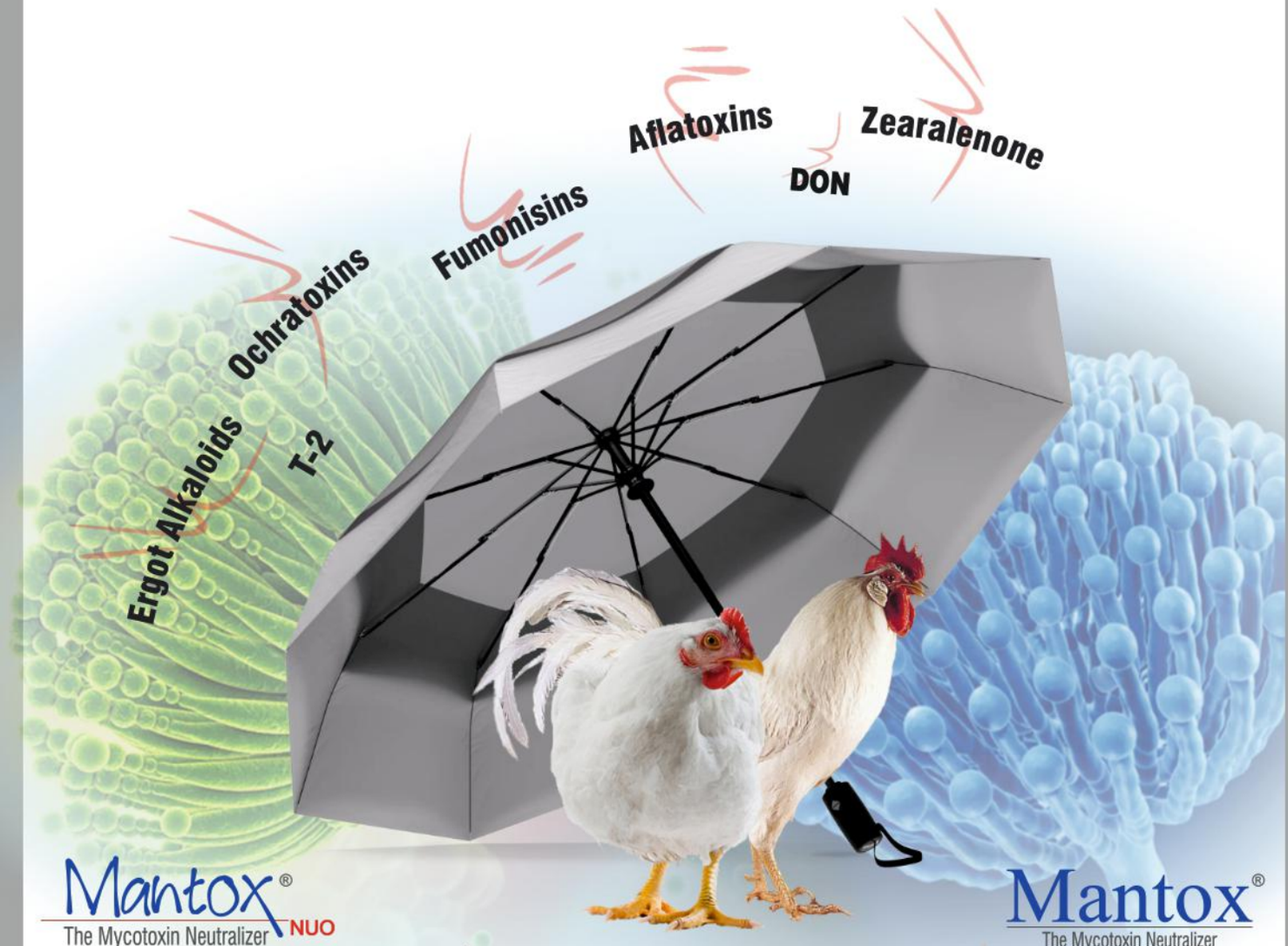

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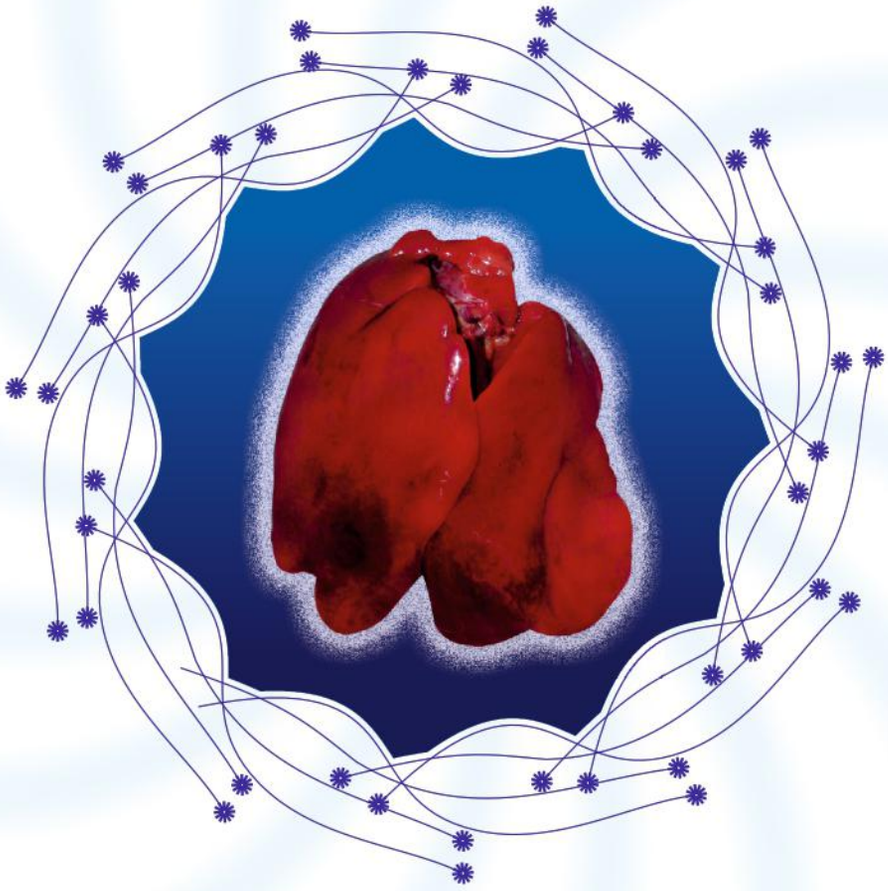

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Biomonitoring: Know the real mycotoxin exposure

Mycotoxins remain a major challenge in animal production. Without accurate evaluation, producers face uncertainty. Biomarker analysis now, for the first time, enables precise measurement of exposure and its impact on health and performance.

Despite recent technological advances, mycotoxins are unavoidable contaminants of feed and still one of the biggest issues in modern animal farming due to a lack of precise evaluation methods for the real mycotoxin exposure. However, biomarker analysis development at industrial level has enabled the accurate measurement of the mycotoxin systemic exposure.

First reliable method to measure mycotoxin exposure

For the first time it is possible to achieve what the scientific community, for a long time, theorised as the best method to correctly assess the true exposure of animals to mycotoxins. By detecting them and their metabolites in bodily fluids, in this case blood. Innovad Group has validated and patented a method to currently determine 36 different mycotoxin biomarkers in blood. Myco-Marker analysis includes emerging mycotoxins, to comprehensively cover total risk. Blood is collected using FTA cards to facilitate the sampling process on farms, requiring just one drop of blood per animal. The cards offer a simple means to easily collect blood spots and dispatch them to our lab for analysis without restrictions.

Blood biomarkers discovered true risk

The feed combined with blood mycotoxin analyses, provides a total overview of the overall mycotoxin exposure. Since launching the service, more than 9,000 blood samples from farms around the world have already been collected. The considerable volume of analytes tested has enabled an unprecedented reliable assessment of actual mycotoxin exposure on farms.

The preliminary results confirmed that feed alone to evaluate the true mycotoxin threat is not up to the task. Firstly, one or more mycotoxins were detected in all the evaluated farms when biomarker analysis was added, whereby 60% of farms were co-exposed to 5 or more mycotoxins. Secondly, a higher number of mycotoxins was detected in blood than in feed. Thus, in most cases (82%) blood analysis uncovered a mycotoxin risk ignored in the feed, confirming that feed analysis can underestimate the real exposure and the better ability of the biomarker analysis to better detect the true exposure of mycotoxins *(Figure 1)*. The emerging mycotoxins produced by *Fusarium* (enniatins and beauvericin) and *Alternaria* (like alternariol) were the most prevalent mycotoxins detected.

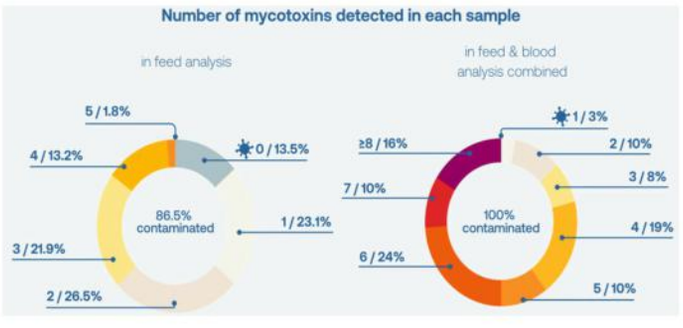

Figure 1 – Total number of mycotoxins detected in feed analysis and in feed & blood analysis combined of >9,000 animals globally.

Assessment of detoxifier capacity under real conditions

The Myco-Marker biomonitoring service on over 9,000 animals confirmed that mycotoxins are persistent in all the farms around the world and significant economic losses are caused by this chronic exposure. Until now, mycotoxin binder application has been the most common mitigation practice on farm, but their efficacy has been evaluated only through a simple *in vitro* binding test.

However, as the European Food Safety Agency has stated, such simple tests performed "in the glass" do not sufficiently mimic the conditions in the digestive tract and cannot be used to demonstrate efficacy under practical conditions. State of art mycotoxin biomarker research with the University of Ghent in Belgium revealed the *in vivo, in animals,* detoxification efficacy of Escent under multi-mycotoxin exposure scenarios.

Efficacy under farming conditions

However, it was indispensable to test the detoxifier technology in real farming conditions across all species, where the animals are simultaneously confronted to other several stress factors, like climatic conditions, low quality of feed, vaccinations, etc.

The Myco-Marker tool was deployed alongside overall performance and clinical assessments. The analyses revealed that systemic mycotoxin levels were widely reduced (or even completely removed) when animals were treated with the feed additive for a few weeks.

At one of the biggest global broiler producers, mycotoxin detoxifier was compared against a control group (without detoxifier). While birds not consuming detoxifier presented 8 different mycotoxins in blood, only 2 mycotoxins (tenuazonic acid and beauvericin at trace level) were detected in blood from animals consuming detoxifier technology. This reduction in mycotoxin exposure was also accompanied by improved performance, like higher final weight (>3%; $p < 0.05$). Findings from all farm trials across species confirm unequivocally the solution drastically reduces systemic exposure to mycotoxins where it is really needed, that is, in the real-world environment.

Trends between real exposure and health symptoms

Chronic mycotoxin exposure, even at low levels, can lead to clinical symptoms. Biomarker analysis can also be applied as a diagnostic tool to assess the impact of mycotoxins on health problems. For example, biomonitoring programs across various farms have detected key correlations: higher exposure to deoxynivalenol and fumonisins was linked to farms suffering from necrotic enteritis, while elevated levels of estrogenic mycotoxins (such as zearalenone and alternariol) were found in animals suffering reproductive alterations.

The origin of some clinical symptoms can sometimes be difficult to identify. However, biomonitoring provides, for the first time, a clear understanding of mycotoxins' true impact on animal health.

Biomonitoring to optimise your mitigation strategy

The combination of the diagnostic tool with the detoxifier offers the producer an innovative Mycotoxin Management Program. The programme follows a 3-tier approach:

1. Collecting feed samples from the animals' diet.
2. Collecting animal blood one hour after feeding using FTA cards.
3. Completing a diagnostic questionnaire to identify clinical and subclinical issues on the farm.

Producers from all farming species have implemented the biomonitoring programme and succeeded to manage mycotoxin related stress with the help of the detoxifier technology.

Mycotoxin biomarker analysis is a breakthrough in stress management, offering producers the first reliable way to measure true risk and mitigation effectiveness on their own farms. This tool helps quantify detoxifier benefits, optimise animal health, and maximise ROI. Potentially saving hundreds of thousands, or even millions.

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KPFBA Elects New Leadership at 30th Annual General Body Meeting

Newly elected Office Bearers and Management Committee of KPFBA for 2025–2027 at the 30th AGM in Bengaluru.

Mr Naveen Pasuparthy re-elected as President for 2025–2027 term

The Karnataka Poultry Farmers and Breeders Association (KPFBA) successfully held its 30th Annual General Body Meeting at Lalit Ashok Hotel, Bengaluru on 9th August 2025. The event brought together poultry farmers, breeders, sector leaders, and stakeholders from across the state.

During the meeting, the Management Committee presented the association's activity report for the past two years, highlighting key initiatives, industry engagement, and policy representations. The financial statements were also presented and received the General Board's approval.

After detailed discussions, the General Board unanimously elected the new team of Office Bearers and Management Committee members for the term 2025–2027.

Management Committee 2025–2027

Hon President – Mr. Naveen Pasuparthy (M/s Nanda Group)

Hon Vice President – Mr. Manjesh Kumar Jadav (Venkateshwara Hatcheries Pvt Ltd)

Hon General Secretary – Mr. Prasanna N (Nandini Poultry Breeding Farms)

Hon Treasurer – Mr. Naveen D Khokle (Diamond Hatcheries)

MC Member – Dr. Rajesh Reddy Shivashankar (S.R Agro Farms)

MC Member – Mr. Sujit Komarla (Komarla Group)

MC Member – Mr. Harshadhan Joshi (Khadkeshwara Farms & Foods Pvt Ltd)

MC Member – Mr. Ajay Shetty (Nutri Feeds & Farms Pvt. Ltd)

MC Member – Mr. Vasanth Manickam (Megha Farm)

MC Member – Mr. S G Veerana (Abis Exports India Pvt Ltd)

MC Member – Mr. Gururaj K (Asha Feeds)

The newly elected team reaffirmed their commitment to work towards strengthening the poultry sector in Karnataka, addressing industry challenges, and supporting the welfare of farmers.

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Proper Litter Management Plays a Key Role in Salmonella Control

Proper litter management is a key factor in controlling *Salmonella* on the farm. Zac Williams, PhD, assistant professor of poultry management at the University of Arkansas, addressed this topic at the Delmarva Chicken Association's 59th National Meeting on Poultry Health, Processing and Live Production.

Considering the proposed new *Salmonella* regulations, he stated that service technicians and growers will likely be "on the frontlines of *Salmonella* control" on farms.

Williams noted that *Salmonella* has been found "everywhere," including on walls, feedlines, dust, equipment, rodents, darkling beetles and flies. Those houseflies, for example, can travel 10 miles. Since modern poultry farms are bunched closely together, houseflies can easily be *Salmonella* vectors at multiple farms.

Broiler litter alone is "home to billions of bacteria," most of which are good and serve to break down the matter, Williams explained. The remainder, however, contains diseases like those he terms "the big three": *Salmonella*, *Campylobacter* and *Clostridium perfringens*.

Litter promotes bacterial growth because "it gives them everything they need" to grow: moisture, nutrients from birds' excreta and warm temperatures. Of these three, moisture is the only one that can be controlled. In his presentation, Williams focused on ways to control the moisture in litter.

Steps before placing the flock

Williams first outlined three steps to reduce bacteria in the litter before the flock is placed on the farm: removing the wet litter, preheating the house and moving the air.

For the first step, go under the waterlines and remove any wet, caky litter, he advised. Next, preheat the house to dry out the litter. Finally, ensure adequate air movement, which "is the single best way to dry anything out," he said, adding that proper ventilation is the best way to get air movement indoors.

Proper ventilation involves moving air along the ceiling rather than on the floor. If cold, moist, humid air is on the ground, "it's going to make it rain inside that house essentially…and you're going to get wet litter," Williams noted.

He described a brooding house with a string of wet litter because the air inlets were completely open and sending air to the floor. The service technician believed he could dry it out over a few months, but Williams said, "He'll never dry that out."

Proper inlet openings are 1.5 to 2 inches (3.8 to 5 cm) for sidewall inlets and 1.25 inches (3.2 cm) for ceiling inlets. Sidewall inlets should be aimed up because ceiling inlets are aimed down. Ceiling inlets should be closed more to allow more air to head toward the ceiling.

Humidity must also be controlled as warmer air carries more moisture.

Growout phase recommendations

During the growout phase, Williams said that wind speed in the barn is the key to keeping litter dry. He recommends at least 600 feet (183 m) per minute of wind speed down the center aisle, noting that as the speed is slower along the edges, the litter there will be wetter.

Regarding cooling pads or evaporative cooling cells, they should not be turned on until the air in the house hits 85° F (29° C) or even higher if the house has sprinklers. He explained that these cells or pads provide "evaporative cooling, not waterfalls," so they should be run on a timer to allow the water to evaporate into them between "on" cycles. Generally, they should be turned on at 10 a.m. and off at 6 p.m. in the South because those are the times when humidity and temperature change.

Williams also stressed the importance of regularly checking water lines for leaks during the growout phase, as "leaks become lakes very quickly."

He summarized that moisture control comes down to proper ventilation by moving air along the ceiling and with enough wind speed during growouts to keep the litter dry.

Windrowing significantly reduces bacteria

Along with moisture control, Williams recommended windrowing litter, noting that research shows "a significant reduction in bacterial populations" when it is done properly, with *Salmonella* decreased from 10 to zero logs, *Campylobacter* to zero and *Clostridium perfringens* also significantly down.

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Windrowing, or turning the litter pile inside out, helps conserve moisture and heat in the pile. It also ensures that the entire pile is heated uniformly because the inner core heats more quickly while the outside is cooler.

"The single most important aspect to remember for windrowing is to monitor the temperatures," Williams said. The ideal temperature range is 130° F (54° C) to 145° F (63° C). Otherwise, you just "paid a lot of money for someone to come in and pile litter," because lower temperatures provide an ideal environment for bacterial growth.

A 3-foot (0.9 m)-long combination thermometer should be used, with temperatures taken from the inner core of the pile. Readings should also be taken from multiple locations at the same time every day "to ensure that the whole pile is heating," as a 600-foot (183 m)-long windrow will have different temperatures from one end to the other, and temperatures can fluctuate throughout the day.

The piles should be turned only once the proper temperature has been reached, so this may change from day to day depending on the changing temperatures.

Chemical litter amendments help kill bacteria

Williams also discussed how chemical litter amendments like acidifiers can reduce litter pH. Acidifying the litter helps kill all the bacteria in those piles, including the big three.

He has seen some farmers try to save money by using only half the recommended amendment, but then the pH drop is "more neutral" and creates "a perfect environment" for bacteria. So Williams stressed that amendments must be used only at their recommended rate.

Williams also highlighted the importance of proper biosecurity and an integrated pest plan in helping control bacteria on the farm. Darkling beetles, for example, can carry *Salmonella*, so an effective pest plan must address them.

Regarding biosecurity, he emphasized that the proper location of footbaths is key to preventing the spread of bacteria. He mentioned a farm he had visited where the footbath was in a corner of the control room. So once workers stepped in it, they walked outside 20 feet (6 m) to the main barn, picking up anything on that stretch of ground, including bacteria.

Key takeaways

Williams concluded by stressing that *Salmonella* is everywhere. His overarching message is moisture control. Keeping the moisture rate in litter to 15% to 20% is "very easy to maintain" and cuts the bacteria's survival time from weeks to hours.

Moisture control, along with windrowing, pest management and biosecurity, will keep bacteria like *Salmonella* off the farm.

He added that farms should also determine how to independently test and verify that the products they buy and use are working. "The salesman told us it was working" is not that verification, he concluded.

ARTICLE

Factors that Impact Egg Quality

Several factors significantly impact egg quality in poultry. These factors can be broadly categorized into hen-related, environmental, and management-related elements. Key factors include nutrition, hen age, health status, and environmental conditions like temperature and humidity.

Nutritional Factors:

- **Calcium and Phosphorus:** These are crucial for proper eggshell formation. Deficiencies can lead to thin, weak, or cracked shells.
- **Vitamins:** Vitamins, especially D, are essential for calcium absorption and overall eggshell quality.
- **Water Quality:** Contaminated water can negatively impact hen health and egg production.
- **Non-starch Polysaccharides and Enzymes:** These can affect nutrient absorption and overall egg quality.

Hen-Related Factors:

Age:

Egg size and shell quality tend to decline as hens age.

Breed / Strain:

Different breeds and strains of hens have varying genetic predispositions to egg quality.

Health:

Diseases can impact egg production and quality. Infections like infectious bursal disease (IBD) can cause shell abnormalities.

Moult:

Induced moulting can temporarily restore egg production and quality, but it's a stressful process.

Environmental Factors:

Temperature and Humidity:

Extreme temperatures, particularly heat stress, can reduce egg size, shell strength, and overall egg quality.

Lighting Programs:

The duration and intensity of light influence egg production and shell quality.

Production System:

Housing systems and management practices can affect egg quality, with factors like stocking density and beak trimming playing a role.

Other Factors:

Stress:

General stress, including handling and transportation, can negatively impact egg quality.

Storage Conditions:

Proper storage (temperature, humidity, and time) is critical for maintaining egg quality after laying.

Contaminants:

Feed or water contamination with toxins or pathogens can significantly affect egg quality.

Additives:

Certain additives in feed can have unintended consequences on egg quality.

Measuring Egg Quality:

Egg Size: Larger eggs are not always better, as they can be more prone to cracks.

Egg Specific Gravity: A measure of density, related to shell thickness and strength.

Shell Color: Shell color can be affected by diet and disease.

Shell Breaking Strength and Deformation: These measure the shell's resistance to cracking.

Albumen Quality: Measured by thickness and viscosity.

Yolk Quality: Measured by color, firmness, and freedom from defects.

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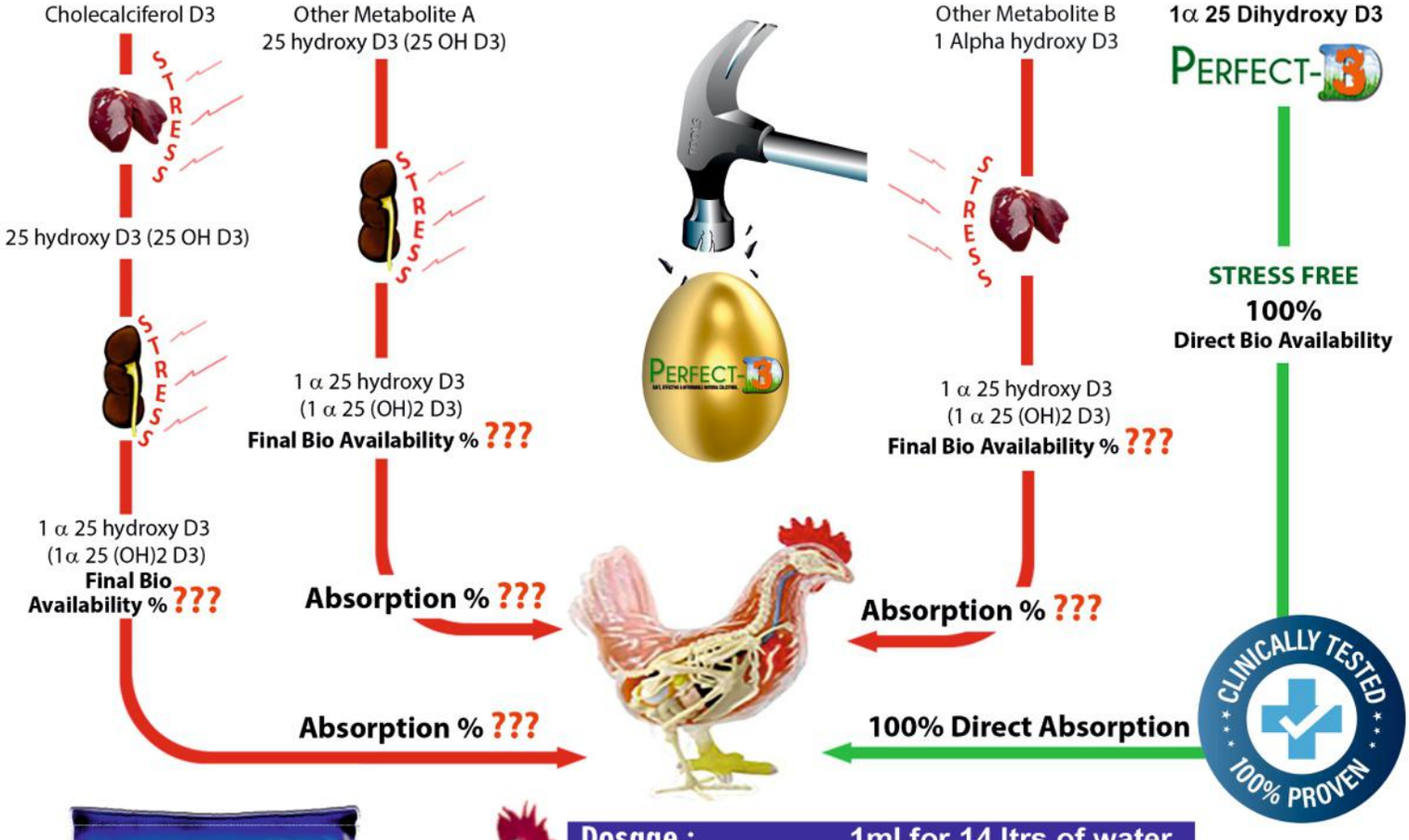

Dosage : 1ml for 14 ltrs of water

Breeders : 200 Gms per Ton of Feed or 1ml for 40 birds.
Layers: 100 Gms per Ton of Feed or 1ml for 56 birds.
Broilers : 100 -200 Gms per Ton of Feed or 1ml for 56 birds.
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Yeast cell wall extract's role in combating mycotoxin risks

Dr. Alexandra Weaver
Global Technical Support for the Technology Group at Alltech

Yeast cell wall extract (YCWE) has been shown to effectively mitigate the impacts of mycotoxins on animal health and performance. Recent meta-analyses highlight its role in improving productivity, sustainability and profitability across both poultry and pig production systems.

Despite significant efforts by the agricultural industry to reduce mycotoxins in the feed supply chain, these toxic compounds remain pervasive globally. Produced by fungi under specific environmental conditions, mycotoxins can contaminate feed during pre-harvest, post-harvest or storage stages. This contamination poses risks to animal health, performance, farm productivity, and profitability.

While strategies such as testing and rejecting contaminated feed ingredients can help, a proactive approach is more effective in preventing issues. This often involves using mycotoxin adsorbents, such as yeast cell wall extract (YCWE), to mitigate potential damage before it manifests.

Impact of mycotoxins on poultry and pigs

Mycotoxins affect both poultry and pigs in ways that compromise their health and productivity, although the specific impacts can vary by species due to physiological differences.

In poultry, mycotoxins primarily affect growth performance, feed efficiency and egg production, even at low contamination levels. Layers exposed to mycotoxins often show reduced egg weight, lower egg production rates, and compromised overall performance, which can significantly affect profitability.

In pigs, mycotoxins can impair growth, feed intake and reproduction. Younger pigs and breeding animals are particularly vulnerable, with toxins such as zearalenone disrupting hormonal balance and reproductive function, while toxins like DON reduce nutrient absorption and appetite. Across both species, exposure to mycotoxins suppresses immune function, making animals more susceptible to diseases and secondary infections.

Insights from meta-analyses

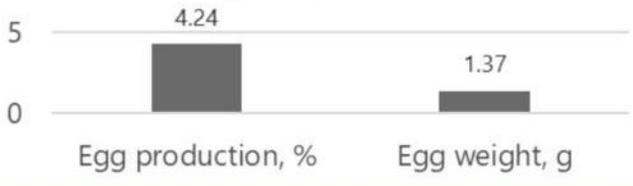
Meta-analyses offer valuable insights by consolidating data from multiple studies, providing a comprehensive understanding of mycotoxin risks and the efficacy of YCWE. Three recent meta-analyses focused on broilers, laying hens and growing pigs reveal the broad impacts of mycotoxins and the benefits of YCWE inclusion across species. These analyses encompassed 56 trials, 79 mycotoxin treatments, 99 YCWE treatments, and data from 15,246 animals.

The studies highlight that even low levels of mycotoxin exposure can negatively impact animal performance. Common effects include reduced growth rates, poorer feed conversion ratios, compromised health and, in poultry, decreased egg production and egg weight. However, supplementation with YCWE during mycotoxin challenges led to significant performance improvements, enhancing animal welfare and productivity.

Poultry findings

In laying hens, exposure to mycotoxins resulted in reduced body weight, egg production and egg weight. Birds supplemented with YCWE during these challenges showed significant recovery, with higher egg production and egg weights, ultimately increasing total output per hen and profitability (Figure 1). Notably, the inclusion of YCWE yielded an impressive return on investment (ROI) of 4.65:1, emphasizing its economic and operational value in poultry production.

Figure 1. Improvement in egg production and quality for hens fed yeast cell wall extract during mycotoxin challenge versus feeding mycotoxins alone**



Another theme that was highlighted in the broiler meta-analysis was sustainability. To understand whether mycotoxins and YCWE play a role in the sustainability of production, the CO2 equivalent (CO2-eq) was calculated for broilers using results from the meta-analysis. This showed that while a mycotoxin-contaminated diet increased carbon footprint over control-fed animals by an estimated 47 metric tons CO2-eq, the use of YCWE lowered this by an estimated 25 metric tons compared to feeding mycotoxins alone. This is equivalent to a savings of 30 round-trip transatlantic flights (New York to London), or the annual usage of 17 cars in the United Kingdom (Figure 2).

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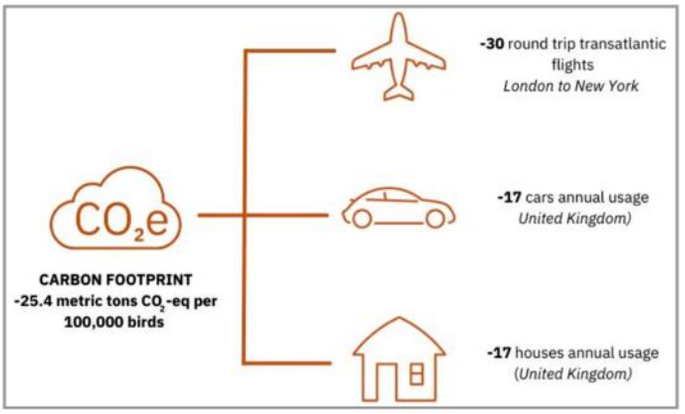

Figure 2: *Carbon footprint impact of mycotoxin-contaminated diets and YCWE supplementation in roiler production.*

Additionally, in this meta-analysis, research indicated that the inclusion of YCWE supported improved bird resilience and overall welfare for birds exposed to mycotoxins.

Pig findings

Pigs, recognized as particularly sensitive to mycotoxins, also experienced reduced performance when exposed. The type and concentration of mycotoxins, alongside the pig's age and production stage, influenced the severity of effects. For instance, aflatoxins harmed liver function and immunity, DON impaired gastrointestinal health, and zearalenone disrupted reproduction.

The meta-analysis demonstrated that even at mycotoxin levels below regulatory thresholds, average daily gain (ADG) decreased by 79 grams in growing pigs, with further reductions at higher challenge levels. However, YCWE supplementation significantly improved ADG and showed trends for improved feed intake, even under severe mycotoxin exposure. These findings underscore YCWE's potential to protect pig health and performance under mycotoxin challenges.

Implications for producers

For both poultry and pig producers, these findings highlight the importance of proactive mycotoxin management to protect animal health, improve performance and sustain profitability. Key steps in managing mycotoxin risk include testing, assessing risk levels, mitigating challenges with solutions like YCWE, and monitoring continuously to adapt strategies as needed.

In summary

Mycotoxin contamination remains a critical issue for livestock producers, negatively impacting health, productivity and profitability. Recent meta-analyses on broilers, laying hens and growing pigs reaffirm the significant risks posed by mycotoxins and the value of YCWE as an effective mitigation strategy.

YCWE has shown clear benefits for both poultry and pigs, enhancing growth, feed efficiency and sustainability while delivering economic advantages. In poultry, YCWE boosts egg production and weight, while in pigs, it mitigates performance losses even under challenging conditions. These insights emphasize the need for innovative, science-backed solutions like YCWE to address mycotoxin risks, ensuring better animal welfare and productivity across the livestock industry.

ARTICLE

Spider Web Issues

In a layer poultry shed, excessive spider webs indicate poor hygiene and can lead to several problems for the birds. These include increased risk of disease outbreaks, parasite infestations, and reduced air quality, all of which can negatively impact the health and productivity of the layer flock.

Addressing this issue requires a multi-pronged approach, including thorough cleaning, disinfection, and preventative measures to reduce spider populations and their attraction to the shed.

Increased Disease Risk:

Parasite Infestation:

Spider webs can harbor parasites like mites and lice, which can cause irritation, stress, and even transmit diseases to the chickens.

Disease Outbreaks:

Poor hygiene, indicated by spider webs, can contribute to the spread of bacterial, viral, and fungal infections, making outbreaks of diseases like Avian Influenza, Fowl Pox, and Aspergillosis more likely.

Compromised Immunity:

Stress from poor living conditions, including the presence of spider webs, can weaken the birds' immune systems, making them more susceptible to diseases.

Reduced Air Quality:

Restricted Airflow:

Spider webs can trap dust, debris, and pathogens, reducing air circulation and ventilation within the shed.

Increased Humidity:

Poor ventilation can lead to higher humidity levels, creating a favorable environment for the growth of mold and bacteria.

Respiratory Problems:

Poor air quality can irritate the birds' respiratory systems, potentially leading to conditions like laryngotracheitis or bronchitis.

Impact on Bird Health and Production:

Reduced Feed Consumption:

Sick or stressed birds may eat less, leading to weight loss and reduced egg production.

Decreased Egg Production:

Poor hygiene and disease outbreaks can significantly lower the number of eggs laid by the hens.

Increased Mortality:

In severe cases, poor hygiene and disease can lead to increased mortality rates among the flock.

Importance of Hygiene:

Regular Cleaning:

Maintaining a clean environment, including removing spider webs and other debris, is crucial for preventing disease and maintaining bird health.

Proper Ventilation:

Ensuring good airflow and ventilation helps to control humidity and reduce the build-up of harmful substances.

Biosecurity Measures:

Implementing biosecurity protocols, such as restricting access to the farm and disinfecting equipment, can help prevent the introduction of diseases.

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NEWS

Indian Poultry Alliance Set to Reach ₹800 Cr Topline this Year

IPA has rapidly deepened its presence across Kishanganj, Zaheerabad, Coimbatore, and Aligarh through an integrated model spanning breeder farms, hatcheries, broiler contract farming, etc

The Indian Poultry Alliance (IPA), a subsidiary of the Allana Group, on Thursday said the company is set to achieve a topline of ₹800 crore in its first year of operations amid rising consumer demand.

IPA has rapidly deepened its presence across Kishanganj, Zaheerabad, Coimbatore, and Aligarh through an integrated model spanning breeder farms, hatcheries, feed plants, broiler contract farming, value-added lines, and rendering units.

"Gearing to touch ₹800 crore in our first year is a reflection of the structural change we are working to unlock in India's poultry sector.

"Our integrated model, rapid geographic expansion, and strategic acquisitions are building the foundation for India's transition from a fragmented, wet-market-led supply chain to a modern, processed poultry ecosystem," Indian Poultry Alliance (Allana Group) Chairman Chittranjan Behl said in a statement.

India's poultry market, valued at ₹2,304 billion in 2024, is projected to grow annually at 12.6% to ₹8,430 billion by 2033, driven in part by a rapid shift from wet-market chicken to safer, more consistent, and convenient processed formats, said the company.

IPA's growth trajectory has been supported by the ₹300 crore acquisition of Kwality Animal Feeds in March, with an additional ₹200 crore earmarked for scaling operations.

Kwality's stronghold in West and South India, long-standing QSR partnerships, and advanced feed capabilities have boosted IPA's production capacity and market reach.

Looking ahead, Gupta said, IPA is building a network of seven processing plants supported by Allana Group's established cold chain, reefer transport, waste management, and export infrastructure.

The company also plans to leverage its USD 120 million investment to establish a greenfield processing plant, adding organic capacity alongside the company's inorganic growth initiatives, he added.

NEWS

The Great Dutch contribution to Indian Poultry & Agriculture

Mr. Michiel Van Erkel was accorded a grand farewell on completion of his tenure in India.at the hotel, Taj Deccan in Hyderabad, Agriculture Counsellor of the embassy of Netherlands had many personalities showering accolade what is excellent interactions, and performance in Poultry and Agriculture sector by the Netherlands business support office, Mr. Harsh Indrarun and Rambabu Vedantam.

Mr. Suresh Chitturi, Mr. Uday Singh Bayas, Mr. Chakravarthi and several others, express happiness and feelings.

Mr. Selvan Kannan, the past general secretary, of India Netherlands business and current PUM volunteer representative had a lot of appreciation for the excellent contribution by Mr. Michiel who specifically organized several technical seminars and events during the Poultry India show at Hyderabad.

The elite gathering ended with a cocktail dinner.


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Treatments / Vaccinations & Drinking Water Disinfection Continue to Develop as Farms Modernize and Comply with Best Practices

A. Medication & Vaccination through Drinking Water (AL Animal health Line)

Among the treatments that can be administered via drinking water are :

- curative / metaphylactic antibiotics, wormers painkillers, anti-inflammatory(respect vet prescriptions)
- vaccines
- vitamins, trace elements
- electrolytes (rehydration)
- probiotics, prebiotics
- organic acids
- essential oils
- bacteriophages, etc.

Advantages of treating via drinking water:

- Sick animals have a tendency for to eat less than they drink in order to compensate for dehydration, body temperature or stress.
- Flexibility required for curative treatments(medicine doses & type + administration periods can be easily adjusted under veterinary control)
- Easy & fast to implement when a problem is detected compared with the delays for production & delivery of medicine premixes.
- The administration through drinking water generally leads to significant antibiotic use reduction compared to the feed medication (in a growing number of countries the preventive medication usually administered via feed as nearly disappeared or is now prohibited such as in Europe since 2022)
- Less risk of antibiotic cross-contaminationwith feed from the feed production unit to the farm.
- Mass vaccination via water is also currently used within more or less 2 hours (timesaving)

Please note that when administering medicines& vaccines via drinking water a number of rules should be observed (refer to Dosatron good practices training programs & tools for vaccination, medication, etc..)

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- Unequalled motor lifespan including water loaded with minerals
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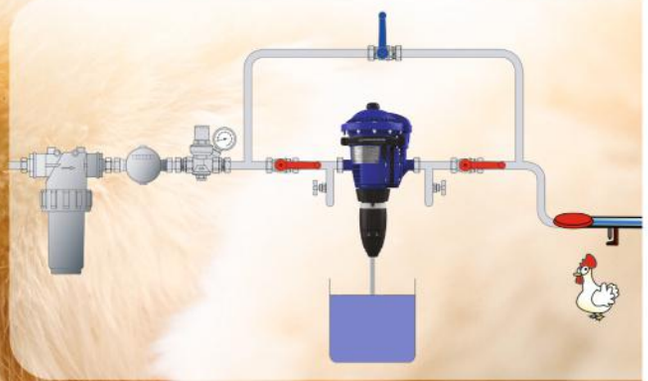

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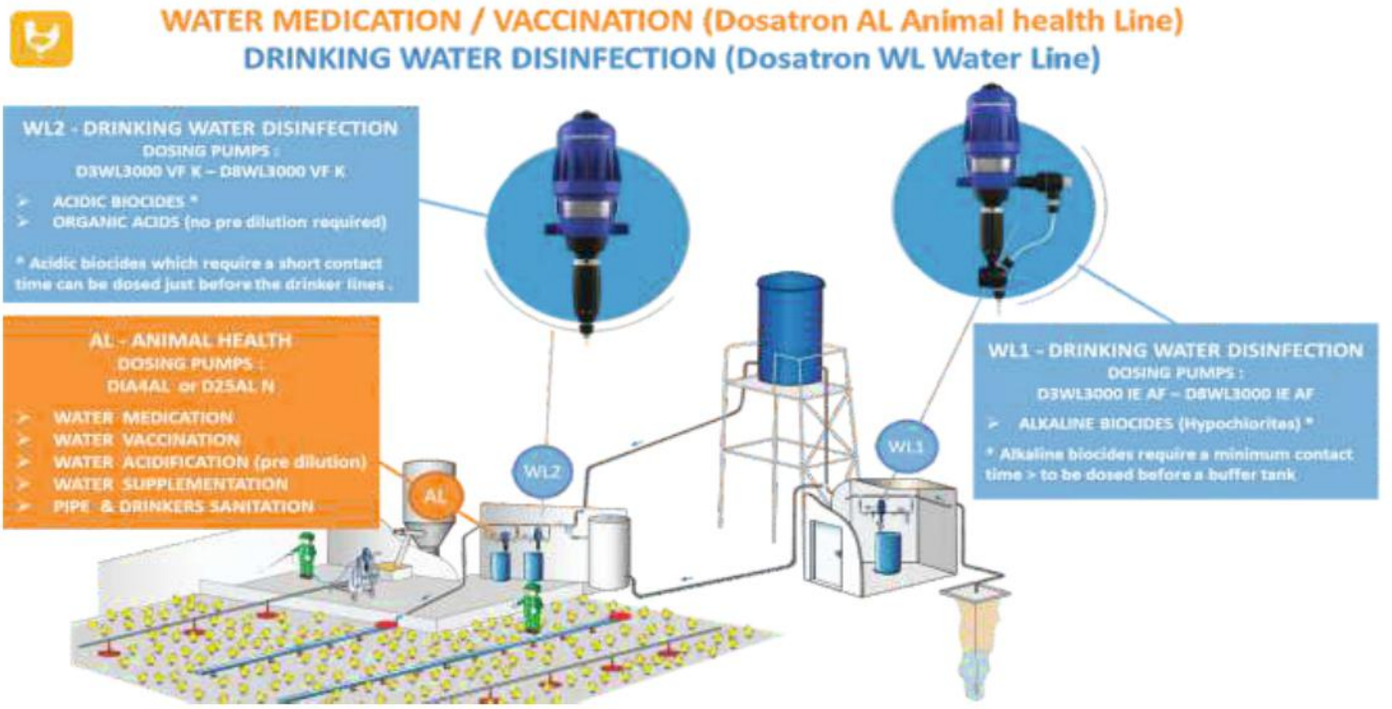
How to choose the dosing pump for Medication / Vaccination:

Most of the hereunder criteria to respect are already listed in:

- The European Medicine Agency 2020 recommendations - Article 106 (6) of Regulation (EU) 2019/6
- The German Din Standard 10529-2

1. **Check the minimum & maximum water flow of the dosing pump**
   - low flow capability (5 or 10 l/h minimum) is a key factor as 70% of treatments & vaccinations are administered to young animals the very first days
   - high water flow capability is important for big numbers of animals & peak consumption periods
2. **Minimum working water pressure & if the dosing precision is affected by pressure drops :**
   - very important when using header tanks as a water source with low pressure.
   - some dosing technologies are injecting the treatment against the water pressure in the pipe (counter pressure). If the water pressure drops which often happen, these dosing technologies could over dose.
3. **Select a maximum dosage (injection rate in %) high enough up to 4% or 5% :**
   - to ensure a good solubility of oral powders (N°1 error in water medication): most oral antibiotics belonging to tetracyclines, penicillins, sulfamides families & many powder supplements often requires a 4% or 5% dosing capability to insure the solubility into the stock solution of the dosing pump (more water in the stock solution tank)
   - a good solubility in the tank means no pump or drinkers clogging & no concentration variation from the tank to the drinkers > the only way to be sure that all animals have a permanent access to the right dose of medicine (knowing that animals only drink for a few minutes a day, at random)
   - water pipe sanitation after depopulation requires sometime disinfectants/biocides dosed at 3% to have a real bactericide/virucide effect & to remove the biofilms
   - high dosing % means a stock solution more diluted with less medicine residues or expensive doses of vaccine wasted at the end of the tank



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4. **Select a dosing pump with a long lifespan + an easy & cost effective maintenance**

   - change seals / wearing parts when recommended
   - don't forget to rinse the dosing pump and the drinking system injecting water after every treatment

5. **Select a dosing pump with sufficient inline dosing and mixing capacity (water + treatment)**

   - to avoid significant variations in treatment/ vaccine dose at the drinkers (given that animals only drink for a few minutes a day, with a highly variable time spent at the drinker at each visit).

To answer frequent water Medication & Vaccination extreme situations, Dosatron SAS has launched the DIA4 AL Diaphragm dosing technology (AL: Animal health Line)

- **Ability to operate at the lowest water flows** (ideal to treat animals from the very first days & small groups)

- **The only pump compatible with heavy load of minerals into water** (iron, manganese, hard water)
- **The longest pump motor lifespan thanks to the motor diaphragm** (no motor piston or water meter wearing / best return on investment per m^3 of treated water)
- **The least expensive motor maintenance** (2 motor mechanism part to replace only)
- **A high dosage capability up to 4%** (to ensure the solubility of oral powders)
- **External injection of the additive to protect the motor**

B. Disinfection of Drinking Water (WL Water Line)

Among the biocides that can be administered via drinking water are :

1. **Alkaline biocides requiring a minimum contact time (dosage before a buffer tank)**

   - Sodium Hypochlorite - NaClO
   - Calcium Hypochlorite - $Ca(ClO)_2$

2. **Acidic biocides with short contact time (dosage possible before the drinkers)**

   - Hydrogen Peroxide - H_20_2
   - Chlorine Dioxide - $Cl0_2$(up to 2000 ppm 2 max into the stock solution)
   - Sodium Troclosene tablets - NaDCC
   - Peracetic Acid - CH_3 COOOH

In general

- Acidic biocides with a short contact time can also be dosed just before the drinking system (just before the Medication/Vaccination dosing pump)
- Alkaline biocides such as traditional hypochlorite (bleach) with a longer contact time should be administered before the water tank to ensure a minimum contact time.

Note:

- Always analyze your water quality (bacteriological & physico-chemical analysis) twice a year & regularly check the residual biocide level at the end of the drinking line.
- Warning regarding vaccinations : Don't forget to stop water disinfection before any vaccination via drinking water (use the existing inhibitors such as Sodium thiosulfate for chlorine or sodium bisulfite for hydrogen peroxide with blue die / Never use skim milk powder with dosing pumps)

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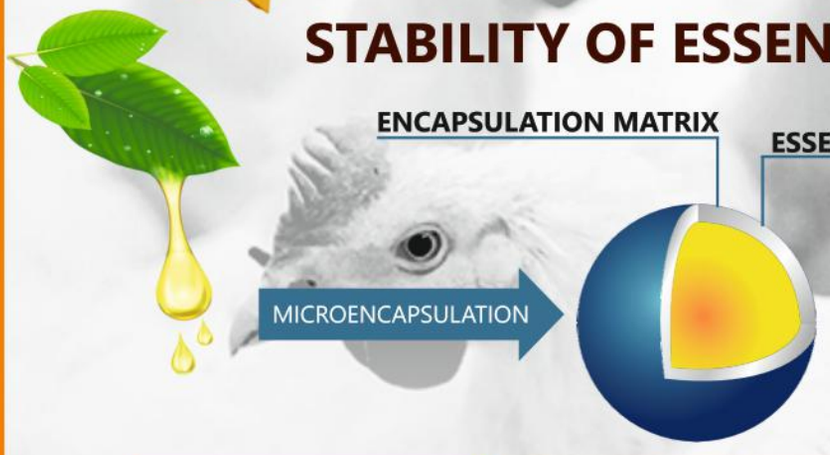

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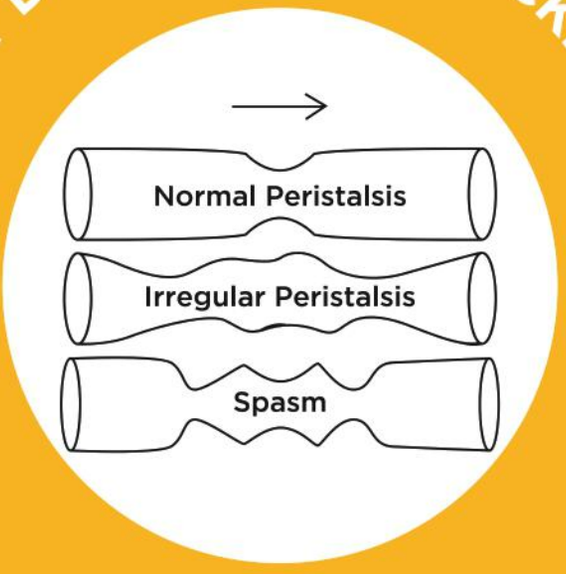

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ARTICLE

Navigating the Monsoon Challenges in Poultry Farming

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Introduction

The beginning of the monsoon season signals a time of opportunity and challenges for the chicken business. Although precipitation relieves the intense heat, it also presents a number of difficulties that might cause disturbances and threaten the well-being and efficiency of chicken farms. To protect the health of their flocks and the survival of their businesses, poultry farmers face a variety of challenges, such as the increased risk of disease outbreaks, the logistical difficulties of managing feed and water in muddy conditions, and the logistical nightmares of transportation on flooded roads. This article explores the major issues that the poultry industry faces during the monsoon season and looks at the tactics used to reduce risks and keep sustainable practices in place regardless the unpredictable nature of the environment.

Disease Outbreaks

The chicken business frequently faces more difficulties because of illness outbreaks during the monsoon season. The high levels of dampness and humidity provide the perfect environment for diseases to proliferate and spread across chicken flocks. In these circumstances, outbreaks of diseases including coccidiosis, infectious bronchitis, and Newcastle disease are especially likely.

- **Coccidiosis:** Protozoa belonging to the genus Eimeria cause this prevalent parasitic illness. It grows well in moist conditions and can cause serious intestinal injury in chickens, which lowers their growth rates and raises their death rate.
- **Infectious Bronchitis:** This viral illness impairs the hens' respiratory systems, leading to respiratory discomfort, low growth rates, and decreased egg production. In humid environments, the virus can proliferate and spread quickly.
- **Newcastle disease:** Another virus that affects many different bird species, including poultry, is Newcastle disease. It can cause digestive, neurological, and respiratory issues, which can cause significant mortality rates in flocks that are infected. The virus can spread quickly through direct touch or infected surfaces and thrives in moist environments.

Poultry farmers usually concentrate on enhancing biosecurity measures, such as restricting access to farms, putting in place strict cleanliness practices, and regularly monitoring flock health, in order to reduce these disease risks during the monsoon season. Furthermore, immunization campaigns are essential for stopping the spread of this and other infectious diseases in chickens.

Poor Ventilation

Heavy rains and excessive humidity can make poor ventilation in chicken buildings more severe, which puts the health and welfare of the birds at serious risk. A lack of air circulation can have a number of negative consequences.

- **Respiratory problems:** Ammonia and other gasses from feces and moisture accumulate when there is insufficient ventilation. This may aggravate the birds' respiratory systems and cause respiratory conditions including infectious bronchitis or chronic respiratory disease (CRD).
- **Increased Stress:** Birds are extremely sensitive to their surroundings. The flock experiences elevated stress levels as a result of inadequate ventilation. Stress weakens the birds' immune systems, increasing their vulnerability to illness and decreasing their general production.
- **Heat Stress:** Poor ventilation and high humidity levels can also cause heat stress, particularly in chicken buildings with a high population density. Growth rates, feed conversion efficiency, and egg production are all adversely affected by heat stress.
- **Decreased Air Quality:** Poor ventilation in chicken houses leads to the accumulation of dust, feathers, and microbiological pollutants, which further deteriorates the air quality. This may result in a higher prevalence of respiratory problems and general flock health problems.

Poultry farmers should install efficient ventilation systems that guarantee sufficient airflow and regulate humidity levels inside the poultry buildings in order to reduce these risks. In addition to preserving the birds' health, proper ventilation is essential for maximizing their growth and output. To reduce the negative consequences of poor air quality on poultry farms, regular ventilation system maintenance and monitoring are crucial.

Muddy Conditio

nPoultry farms and the surrounding areas may become muddy due to persistent rain. This not only raises the risk of bacterial infections and foot pad dermatitis in chickens but also makes cleaning more difficult. Numerous difficulties and health hazards for the birds are prevalent in and near poultry farms due to persistent rain that creates muddy conditions:

- **Hygiene and cleanliness:** It is challenging to keep the poultry buildings clean due to the muddy circumstances. The buildup of mud and dirt can pollute supplies of water and nourishment, putting the birds' health at danger.
- **Bacterial Infections:** Extended exposure to muddy environments raises the risk of bacterial development. Moist, unclean conditions are ideal for the growth of bacterial illnesses like Salmonella and E. coli. If these illnesses are not treated right away, they can spread fast throughout the flock, leading to disease and even death.
- **Foot Pad Dermatitis:** In poultry, foot pad dermatitis, also known as footpad lesions, can result from muddy and moist circumstances. The birds' feet become softer due to their frequent contact with filthy and damp surfaces, increasing their vulnerability to cuts and infections. In addition to causing discomfort and anguish, foot pad dermatitis has an impact on the birds' general health and well-being.

During times of persistent rain, poultry breeders should think about taking the following precautions to lessen these risks:

- **Surface Management and Drainage:** Make sure adequate drainage systems are installed around the chicken houses to divert extra water away from places with heavy traffic.
- **Litter and Bedding Management:** To keep the chicken houses dry and absorb moisture, use the proper bedding materials. To avoid bacterial accumulation, change wet bedding on a regular basis.

Install footbaths or clean entryways at the entrances of chicken buildings to minimize the infiltration of dirt and pollutants.

- **Health Monitoring:** During times of muddy conditions, pay closer attention to the health of the birds. Minimizing the impact of foot pad dermatitis and bacterial infections on the flock requires early detection and treatment.

In spite of difficult weather circumstances, poultry farmers may contribute to ensuring the health, welfare, and production of their birds by proactively managing muddy conditions and upholding excellent hygiene procedures.

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Feed Management

Handling feed storage becomes essential during the monsoon season because of the enhanced danger of spoiling brought on by high humidity. The following are the main issues and things to think about with regard to feed management in chicken farming at current time:

- **Spoilage Because of High Humidity:** Feed may collect moisture from the air as a result of high humidity, which may result in mold growth and spoiling. In addition to losing its nutritional value, spoiled feed puts the birds' health at danger if they eat it.
- **Impact on Nutritional Quality:** Mycotoxins, which are created by molds, can be present in spoiled feed and have a negative impact on the health and productivity of chickens. Mycotoxins can lower feed intake, weaken the immune system, and hinder the absorption of nutrients, all of which lower productivity in the birds.
- **Higher Expenses:** Poultry growers incur higher expenses when they have to discard faulty feed. Furthermore, eating damaged feed can result in lost profitability due to lower growth rates and egg production, as well as increased veterinary expenses.
- **Storage Conditions:** In order to keep feed from spoiling, proper storage conditions are essential. Feed should be kept dry and well-ventilated, away from sources of moisture and direct sunlight. Using silos or containers that are resistant to moisture can assist preserve feed quality when there is a lot of humidity.
- **Rotation and Monitoring:** Keep an eye out for any indications of decomposition, such as odd smells, discoloration, or clumping, on stored feed. Use a first-in, first-out (FIFO) system to make sure that older feed is used first, reducing the possibility that feed will deteriorate from extended storage.
- **Quality Assurance:** Purchase feed from reputable vendors who uphold stringent standards for quality. For chickens to grow, stay healthy, and produce as much as possible, they need high-quality feed, especially in severe weather.
- **Modified Feeding Techniques:** Feed compositions such as pelleted or extruded feed are less likely to deteriorate than mash feed, thus take into account modifying feeding schedules or using them instead. During the monsoon season, these formulas can assist minimize waste and maintain feed quality.

Poultry farmers may lessen the difficulties in managing feed during the monsoon by putting these strategies into practice, guaranteeing that their birds receive the high-quality nutrition required to preserve productivity and health.

Water Management

In poultry farming, water management is essential, particularly during times of heavy rainfall that can cause floods or waterlogging. The following are the main issues and topics to think about when managing water under such circumstances:

- **Drinking Water Quality:** Water sources that are currently in use, such as wells, ponds, or water tanks used to store water for poultry, may become contaminated due to flooding or waterlogging. Birds may get waterborne illnesses as a result of germs, bacteria, and other dangerous materials present in contaminated water.
- **Health Risks:** When birds drink tainted water, they run the danger of getting a number of waterborne illnesses, including avian influenza, bacterial infections like colibacillosis, and parasite infections like coccidiosis. These illnesses may result in lower output, greater death rates, and more expensive veterinary care.
- **Water Availability:** Floods have the potential to cut off poultry houses' access to safe drinking water. Waterlogging can also make it difficult to maintain water systems and allow adequate drainage, which would leave less water available for the birds.
- **Preventive Measures:** To control water availability and quality during the monsoon season, preventive measures must be put into place.
- **Water Source Management:** Check and test water sources frequently for pollution. To make sure that the water quality satisfies requirements for poultry health, apply water treatments like filtration or chlorination.
- **Water Storage:** To avoid contamination, make sure that water storage facilities are raised or shielded from flooding. Use covered containers or tanks to protect water from debris and runoff from rain.
- **Drainage Systems:** To reduce waterlogging and promote runoff after intense rainfall, keep up efficient drainage systems surrounding chicken houses and water sources.
- **Sanitation and Monitoring:** During the monsoon, pay closer attention to sanitation procedures and water quality. To guarantee that birds always have access to clean water and to avoid biofilm accumulation, clean waterers on a regular basis.

Problem of transportation

For poultry farms, transporting supplies and goods during periods of intense rain or flooding poses serious logistical issues. The following describes how these issues affect supply chains and the methods farmers use to lessen them:

- **Mechanized Supply Chains:** Roads may become dangerous for transit vehicles or impassable due to heavy rains and flooding. This makes it more difficult for chicken items to reach markets or processing facilities on time, including processed meat, eggs, and live birds. It also has an impact on the transportation of necessities to chicken farms, including bedding, medicine, and feed.
- **Expense Increases:** Transport delays and supply chain interruptions frequently result in higher expenses for chicken producers. This can involve paying more for emergency supplies, other methods of transportation, or storage facilities to keep track of inventory while delays occur.

Strategies for Mitigation

- **Better Drainage Systems:** Improving farm drainage systems lowers the risk of supply chain interruptions, ensures access for transportation vehicles, and lessens waterlogging and flooding.
- **Appropriate Ventilation:** It is essential to keep chicken buildings adequately ventilated. Making sure birds are comfortable and have enough ventilation during delays in transit helps them feel less stressed and lowers their chance of developing respiratory problems.
- **Rigid Biosecurity Measures:** Putting strict biosecurity measures in place helps stop the entrance and spread of illnesses during disruptions in transportation. This entails limiting vehicle access, cleaning tools, and keeping an eye on the wellbeing of birds.
- **Feed Additives:** During stressful times, poultry's immune system and digestive health can be supported by using feed additives like probiotics or immune enhancers. This supports resilience against illnesses and general health maintenance.
- **Emergency Preparedness:** It's critical to create alternate strategies in case of severe weather. To ensure business continuity during power outages, this may entail setting up backup generators or alternative energy sources, staying in touch with suppliers and customers, and planning alternate routes for transportation.
- **Collaboration and Communication:** Having a solid rapport with suppliers, transportation companies, and other supply chain participants enables efficient communication and quick resolution of unforeseen issues. Timely modifications to transit schedules and backup plans are guaranteed through coordination.

Poultry entrepreneurs can lessen the logistical difficulties involved in moving supplies and poultry products amid heavy rains and flooding by putting these measures into practice. By taking a proactive stance, they may cut expenses, preserve operational effectiveness, and guarantee the wellbeing of their chicken population.

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The Burden of Salmonella in Poultry:
Implications for Health, Productivity, and Biosecurity

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Product Manager-Terapeutics
Stallen South Asia Pvt. Ltd.

Dr. Sanjay Singhal
Chief Operating Officer
Stallen South Asia Pvt. Ltd

Salmonella is a leading cause of foodborne illness globally, with non-typhoidal serotypes like *S. Enteritidis* and *S. Typhimurium* responsible for the majority of gastroenteritis cases. In India, though national surveillance data is limited, reports under the Integrated Disease Surveillance Programme (IDSP) show hundreds of foodborne outbreaks annually, with thousands affected. Vulnerable groups such as infants and immune compromised individuals are particularly at risk, as even low doses of *Salmonella* can trigger severe illness. South Asia reports an estimated 2.2 cases of invasive non-typhoidal *Salmonella* per 100,000 people annually, with a high fatality rate. Poultry—especially chicken meat and eggs—remains a primary reservoir, with multiple studies indicating widespread contamination and rising antimicrobial resistance, posing significant public health risks.

With increasing demand for poultry and growing concerns over antibiotic resistance, India faces the challenge of balancing production efficiency with food safety. Regulatory moves to restrict antibiotic use, combined with consumer preference for antibiotic-free meat, are pushing the industry towards alternative control strategies. Preharvest measures like biosecurity, improved farm hygiene, and feed additives, along with postharvest controls such as HACCP implementation, are being emphasized. Vaccination has become a core preventive tool; however, the need persists for more robust vaccines offering cross-protection against diverse and emerging serotypes. This review highlights the current understanding of *Salmonella* in poultry and explores sustainable control approaches suitable for the Indian context.

Transmission:

Salmonella primarily spreads through the faeces of infected chicks, contaminated feed, water, and litter. Human activities, such as farm visits without proper biosecurity and movement between chicken houses, also contribute to its spread. Transmission occurs via direct contact with infected birds or indirectly through contaminated environments. Vertical transmission, particularly through infected eggs, is key in sustaining outbreaks, as asymptomatic carriers can pass the bacteria to offspring for up to 14 weeks. These bacteria can survive in the environment for months under favourable conditions, though sunlight and high temperatures reduce their persistence. Wild birds, mammals, and insects, especially red mites, can act as vectors, complicating control efforts.

Pathogenesis:

Salmonella pathogenesis starts when bacteria are ingested, surviving the stomach's acidity to invade the intestinal mucosa using virulence factors like plasmids, toxins, fimbriae and flagella. They infect non-phagocytic cells and macrophages, triggering inflammation and evading the immune system. The bacteria spread via the bloodstream to organs like the liver, spleen and kidneys causing symptoms such as diarrhoea, loss of appetite and depression, leading to high mortality, especially in young chicks. Salmonella can be transmitted both vertically and horizontally. It induces inflammation, macrophage apoptosis, and can cause severe haemolytic anaemia, leading to rapid death. The incubation period is typically 4 to 6 days.

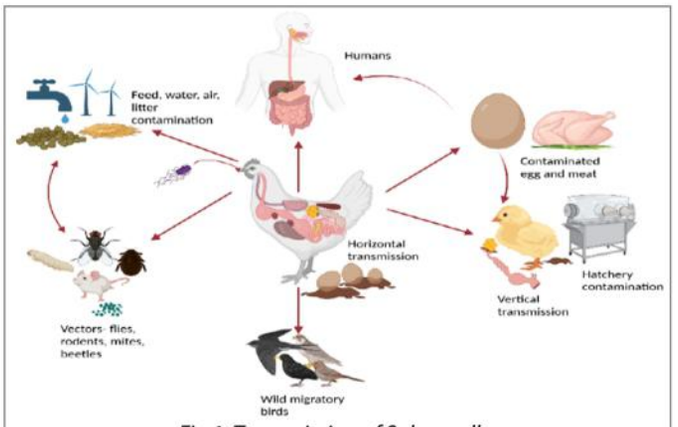

Fig.1: Transmission of Salmonella.

Clinical signs:

Pullorum disease mainly affects young birds particularly chicks under 3-4 weeks old, with peak mortality at 2-3 weeks. Infected embryos may die in the egg and recently hatched chicks often exhibit signs of acute septicaemia such as depression, weakness, loss of appetite, drooping wings, huddling, laboured breathing, dehydration, and ruffled feathers. White, viscous diarrhoea and faecal pasting around the vent are common. Older chicks may experience a less acute disease course, sometimes developing arthritis or blindness. Survivors may be underweight, poorly feathered and less productive as adults. Infections in birds older than 4 weeks are usually asymptomatic but can result in decreased egg production and fertility. Fowl typhoid affects birds of all ages with symptoms like depression, appetite loss, weight loss, dehydration, ruffled feathers, yellowish diarrhoea and respiratory distress. Older birds may experience decreased egg production, fertility, and hatchability leading to anaemia with pale, shrunken combs and wattles. Atypical outbreaks, such as one in quail characterized by decreased egg laying and high mortality without clear clinical signs can also occur.

Diagnosis:

Lesions may be highly suggestive; however, diagnosis should be confirmed by isolation, identification, and serotyping of S Pullorum. Infections in mature birds can be identified by serological tests, followed by necropsy evaluation complemented by microbiological culture and typing for confirmation.

Official testing recommendations for flocks in the US are outlined in the National Poultry Improvement Plan (NPIP). The NPIP lists approved rapid assays for Salmonella. These include, for example, PCR assay and lateral flow immunoassays. Some assays are for the general detection of all Salmonella spp. Further typing is required after these general detection assays. Other NPIP-approved rapid assays are specific for Salmonella enterica serotype enteritidis like plasmid profiling and ribotyping, aid in accurate identification and differentiation.

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Postmortem lesions:

The liver is yellowish in colour with haemorrhagic streaks. In chronic cases the ovary consists of pedunculate and misshapen ovules. The most obvious lesion includes enlarged and congested liver, which becomes dark red or brown (bile-stained liver) after exposure to the atmosphere. There may be multiple necrotic areas throughout the liver. There is congestion and necrosis of the liver and spleen with catarrhal enteritis.

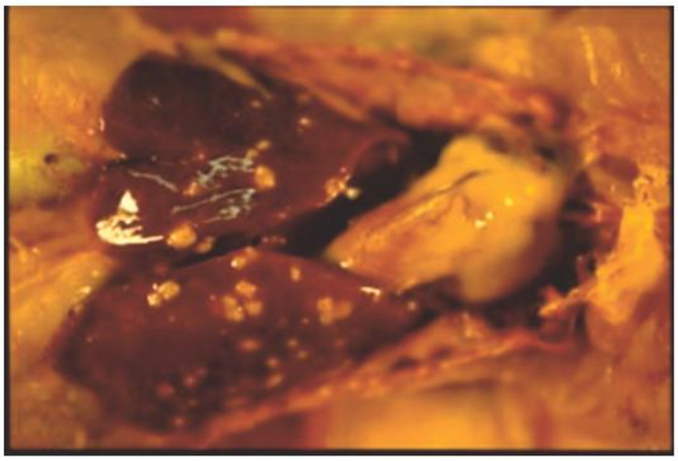

Fig. 2 Granulomatous hepatitis, liver, chicken

Antimicrobial Resistance:

Antimicrobial resistance is a growing global challenge, worsened by insufficient assessments of Salmonella resistance and lack of regulation. The easy access to antimicrobials without prescriptions, along with incomplete treatments, exacerbates the problem. In poultry farming, the overuse of antibiotics has led to the development of resistant strains, including those producing extended spectrum beta-lactamases (ESBLs), posing a serious threat to both public health and the poultry industry (Parvej et al., 2016). Resistance mechanisms include bacterial target modifications, changes in cell membrane permeability, and efflux pumps. Misuse of antibiotics has resulted in the rise of multidrug-resistant Salmonella strains, making treatment more difficult and highlighting the need for more careful antibiotic use (Farhat et al., 2023).

Prevention and control:

Preventing and controlling salmonellosis on poultry farms is essential. Key strategies include removing infected birds, keeping healthy and sick birds separate and using testing methods like tube-agglutination to screen flocks. Strong biosecurity measures, such as strict hygiene, controlled farm access, and proper management of litter, feed, and water, help reduce disease spread. Without these measures, fowl typhoid poses a significant economic threat, highlighting the need for organized control programs with accurate testing and prompt action.

Vaccination plays a crucial role in preventing and controlling salmonellosis on poultry farms. Effective vaccines can help reduce infection rates of fowl typhoid and *salmonella enteritidis* providing long-term protection for flocks. In addition to vaccination, strategies like early identification and removal of infected birds, routine testing, and strict biosecurity measures (e.g., hygiene, controlled farm access) are essential for minimizing disease spread. Combining vaccination with proper management of litter, feed, and water enhances flock health and reduces the economic impact of fowl typhoid, making it a key component of any comprehensive disease control program.

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Characteristics	Does not revert to virulence	Possible reversion to virulence
Targeted Infections	*Salmonella gallinarum, gallinarum Salmonella Enteritidis*	Primarily *Salmonella Salmonella pullorum,* (Fowl Typhoid)
Administration	Oral (via drinking water)	Subcutaneous injection
Vaccination Program	Initial dose at 6-8 weeks, second at 16-18 weeks. Early dose if early infection history.	Initial dose at 6 weeks, revaccination every 12 weeks for layers.
Effectiveness	Broad protection including *Salmonella Enteritidis*	Focused on protection against *Salmonella gallinarum*

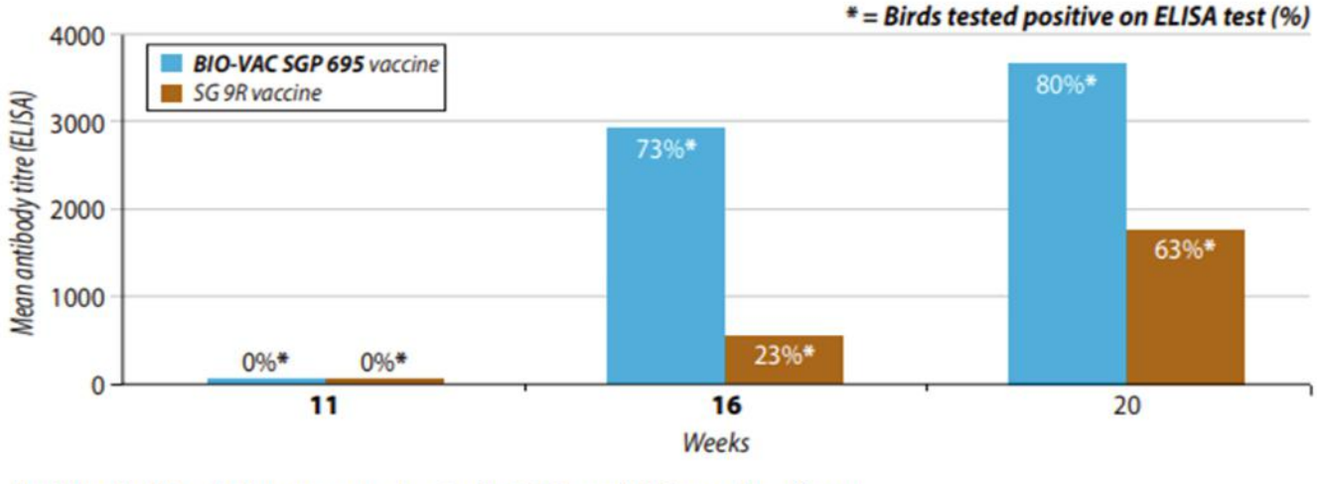

Fig 3: ELISA report of BIO-VAC SGP 695 and SG 9R vaccine

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Chicks/HH at 64 weeks	150.3	
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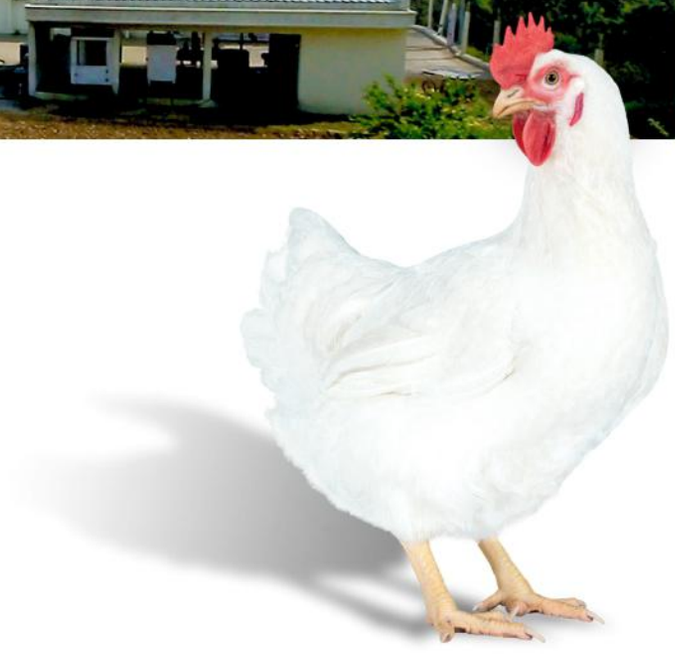
Per hatching egg produced	327 g	286 g
Per chick produced	382 g	334 g



BROILER PERFORMANCE		
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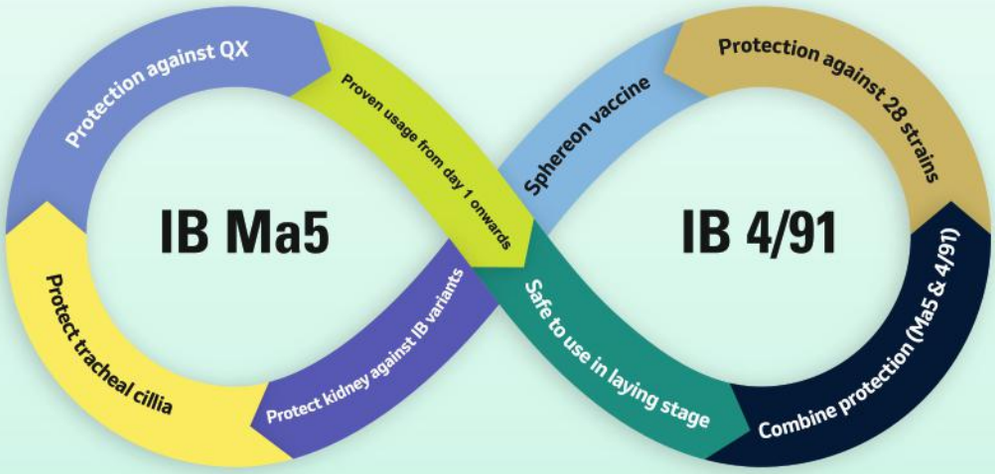

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