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JULY 2025

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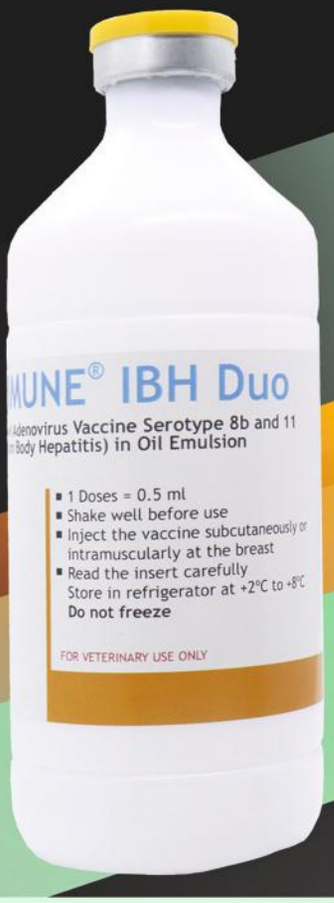

Inherit Health, Ensure Safety against
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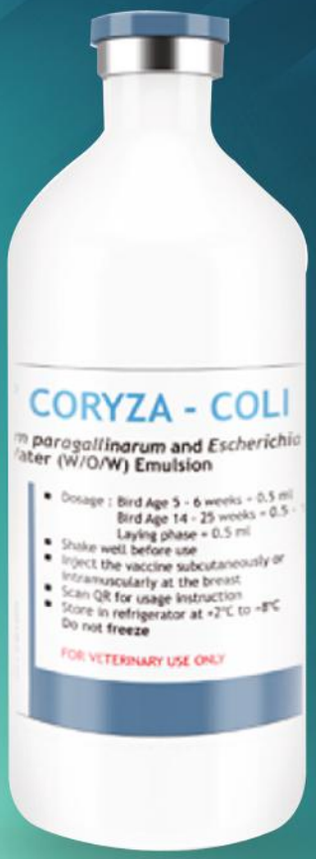
VAKSIMUNE® CORYZA COLI



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Treating
Life Naturally

From the Editor's Desk

The Global Chaos

The Chief Minister of Haryana, Sh. Nayab Singh Saini gave a patient hearing and extended full support in hearing out the farmer's woes under the leadership of Sh. Mahipal Dhanda, Education Minister, Haryana. Sh. Ranpal Dhanda and the leadership of PFI, BBAN, the meetings were organized quite successfully.

The market rates for broiler chicken and eggs seem to be in recovery mode recently.

The Vets In Poultry Symposium organized at Chandigarh attracted certain people from the industry, despite some challenging conditions.

The Namakkal farmers deserve kudos for successfully exporting the table eggs to the United States of America, which is a great achievement. Once this barrier is broken, it will pave the way, helping the layer farmers with remunerative prices and consistent market avenues.

The G7 had to ultimately invite the Indian Prime Minister, Narendra Modi, silencing many critics. The Prime Minister also had an opportunity to give a strong message to President Donald Trump about India's stand on the cease-fire request from Pakistan, and also that no mediation request was made by India to the USA. President Trump's strong desire for a Nobel Prize is driving him to self-declare as a peacemaker. His election promises of bringing peace in Ukraine Ukraine-Russia war within 24 hours; in solving all problems the world over instantly- are not working out in reality. President Trump's repeated claims to have brokered the ceasefire are not well accepted by the media and the public due to a lack of credibility.

The stopover of Prime Minister Modi in Cyprus sent a message to Turkey that it will face strong consequences for its misadventure of openly supporting Pakistan against India.

It is becoming a norm that there must be a war happening, actively somewhere on this planet. The geopolitics is not towards humanity, but towards control and money power at the cost of destroying lies and countries. The Israel-Iran war can spill out of control, adding to the loss of human lives, Properties, and peace. The Americans driving countries to choose sides is not going well with the independent mind of India. The world is treading a dangerous path leading to instability and problems for all the economies in the world. The impotence of the United Nations as a body is visible. The United Nations, most likely, is manipulated by a powerful few who work against the common global interest for peace.

Editor

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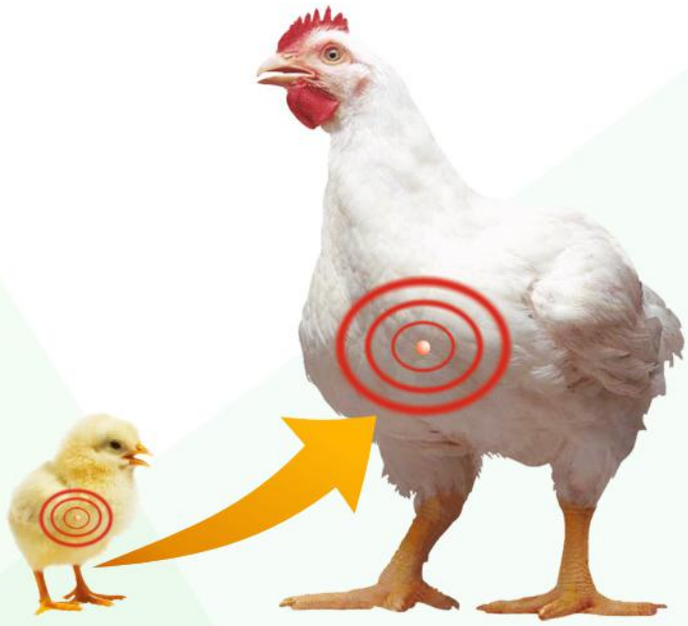

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Legend SERIES 15 **Mr. Soundararajan** Director of Suguna Foods Pvt. Ltd.
Page No. 50-51

Legend SERIES 16 **Mr. Prakash Khaire** Partner, Vetina Healthcare
Page No. 100

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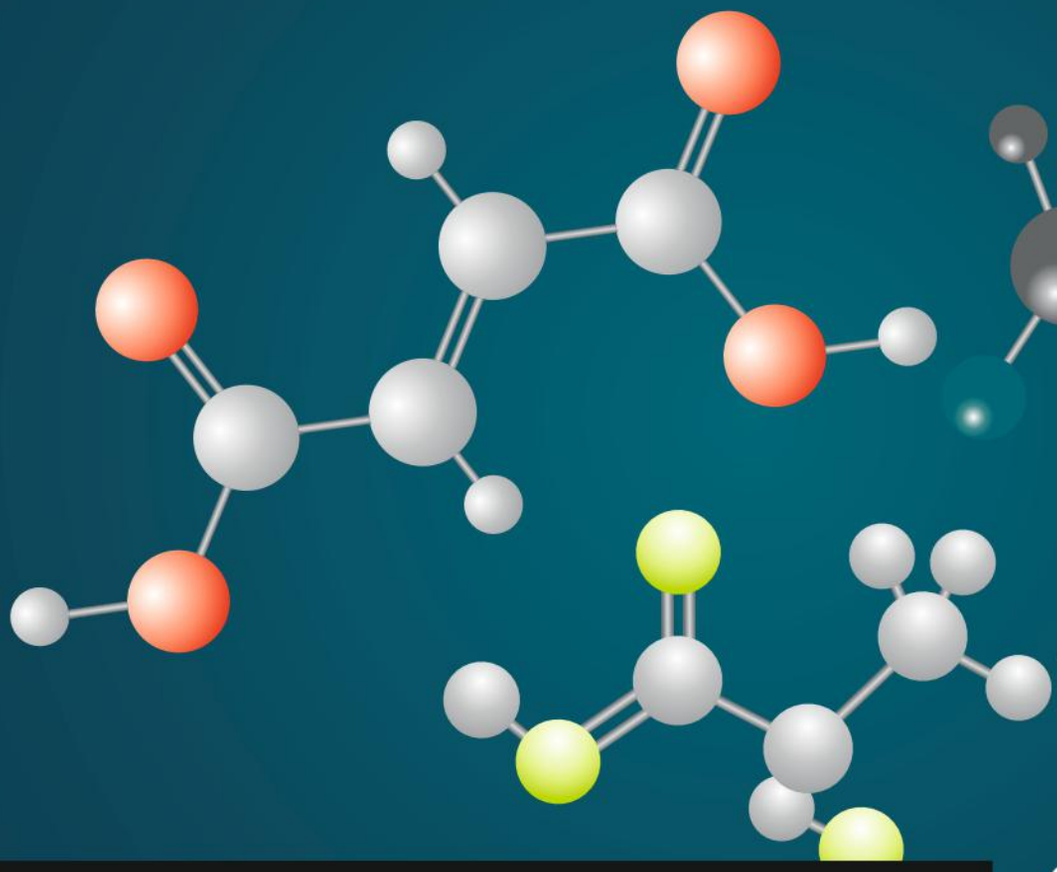

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पहले क्यों बहुत अधिक समस्या थी उसकी समीक्षा कर लेते हैं। प्रारम्भ से लगभग सन् 1962 से जबसे पोल्ट्री ने इंडस्ट्री का रूप बहुत तेजी से लेना प्रारम्भ किया। हम फिशमील के आशिक बन गए। कोई भी फीड बिना फिशमील के नहीं बनती थी। मीटमील का भी उपयोग होता था, परन्तु कम मात्रा में, कारण था यह स्टरलाइज्ड नहीं था। इसे उबालकर धूप में सुखाया जाता था, जिस कारण इसमें 'बदबू' रहती थी। वैसे तो फिशमील भी स्टरलाइज्ड नहीं था। इसे नमक लगाकर धूप में सुखाया जाता था। इस कारण इसमें महक या बदबू कम थी। इस प्रकार की मछली जब ग्राइंड करके आती थी तो नमक का पता नहीं चलता था परन्तु जब यही मछली आप 'खड़ी या साबुत' मंगवा लें तो नमक साफ दिखता था। विडंबना देखिये साबुत मछली महंगी मिलती और पीसी हुई मछली सस्ती मिलती। परन्तु ऐसा क्यों? आंध्रप्रदेश, उस जमाने में फार्मों के विजिट के लिए गया था। देखा साबुत मछली धुप में खुली सूख रही है। शाम को कुछ औरतें उसे पटक–पटक कर नमक झाड़ रही हैं। वहां इस तरह से नमक निकाल कर पीसने के बाद इस्तेमाल करते थे, अधिकाँश पीसी हुई मछली ही मंगवाते थे। उसमे नमक की मात्रा कितनी है पता ही नहीं चलता था। टेस्ट बहुत कम लोग करवाते थे।

जब भी ऐसी मछली जिसमे नमक की मात्रा ज्यादा हो तो ब्रायलर के पेट में पानी बनना शुरू हो जाता है और कभी तो गुब्बारे की तरह फूल जाता है जिसे हम एसाइटिस (ASCITIS) के नाम से जानते हैं। वैसे तो एसाइटिस के कई कारण हैं जिसमे नमक की टॉक्सिसिटी के अतिरिक्त ऑक्सीजन की कमी भी बहुत बड़ा कारण है। इस कारण यह पहाड़ों और ठंडी जगह की मुख्या समस्या है। लद्दाख एवं श्रीनगर के आस–पास यह गंभीर समस्या है। बहर हाल अभी नमक तक ही सीमित रखते हैं। सन् 1990 के दशक से सोयाबीन मील ने फिशमील को या तो बिलकुल ही फीड फॉर्मूले से बाहर निकाल दिया है या मात्रा बहुत कम करवा दी है। फीड तो पोल्ट्री के लिए बन रही थी परन्तु पूरे भारत के किसान फिशमील के एडिक्ट हो गए थे। दिल्ली के एक फीड मील की विजिट थी। वहां से बिहार के बहुत से पोल्ट्री फार्मर्स फीड बनवा कर ले जाते थे। वह शिकायत कर रहे थे कि "फीड में मछली की महक नहीं आती है'। सभरवाल साहब जो इस फैक्ट्री के मालिक थे उन्होंने कहा "मैं अभी चेक करके आता हूँ"। वह वापिस आये और कहा कि "नहीं फिश तो पड़ रही है, इस बार लगे कि फिश नहीं है तो तुरंत फोन करियेगा"। वह मुझे लेकर अपने फार्म के लिए चल पड़े। रास्ते में मैंने कहा कि "लोग इस सोयाबीन युग में भी मछली मांग रहे हैं?" हँसे और कहने लगे "मजबूरी है। मैं डालता नहीं पर यू. पी., बिहार के लिए मछली का 'तड़का' लगवा देता हूँ"। "वह कैसे?" कहने लगे "जब बोरी का मुँह सिलते हैं 25–30 ग्राम मछली का चूरा वहां छिड़क देते हैं। उन्हें बस इसकी महक चाहिए"। वैसे सोयाबीन मील का जबसे उपयोग होना शुरू हुआ एसाइटिस की समस्या बहुत कम हो गयी। परन्तु जाड़ों में जब हर जगह पर्दा लगा रहता है अक्सर यह समस्या मिलती रहती है। यह ऑक्सीजन की कमी और अधिक अमोनिया के कारण होता है।

सन् 1968 या 1969 की बात है। रानीशेवर प्रारम्भ से ही हिन्दुस्तान लीवर की फीड इस्तेमाल करता था। बहुत सी फीड कंपनियों ने कोशिश की अपनी फीड देने की। जनरल साहब हमेशा नकार देते थे। इसके दो कारण थे। पहला हिन्दुस्तान लीवर फीड उस समय सबसे अच्छी फीड थी। उनके पास डॉक्टर एच सी सक्सेना जैसे दिग्गज थे। ऐसा नहीं था इस फीड में समस्या नहीं आती थी। आती परन्तु तुरंत कंपनी के लोग आते और उसका निवारण करते। दूसरा कारण था हिन्दुस्तान लीवर के डीलर सारे हिन्दुस्तान में फैले थे, वह रानीशेवर की पब्लिसिटी करते और रानीशेवर अपने कस्टमर को हिन्दुस्तान लीवर के फीड का सुझाव लिख कर भेजता था। हम लोगों ने सन् 68–69 में जनरल साहब को सुझाव दिया कि "सर हम लोग 20 प्रतिशत फीड किसी और अच्छी कंपनी का उपयोग करें, जिसे आप "चेक फीड" कहें, जब कोई फीड के कारण समस्या आएगी हमे तुरंत पता चल जायेगा"। दिल्ली की ही एक कंपनी से तय हुआ। यह भारत की पहली कंपनी थी जिसने पिलेट फीड का भी प्लांट लगाया था। अपना फीड फार्मूला था, सामने फीड बनवाकर लाना था। एक सूबेदार मेजर की ड्यूटी लगाई गयी कि हर बार दाना बनवाने जायेंगे। पहली बार मुझे साथ भेजा गया। काफी साफ सुथरी फैक्ट्री थी। सारा माल चेक हुआ। सभी अच्छे थे। प्रीमिक्स पहले से ही बना रखा था जो 50 KG प्रति टन पड़ना था। फीड बना सूबेदार मेजर ने अपने सामने हर चीज तुलवाई थी। हम लोग आ गये। सुबह फीड हर शेड में जाना था और हर शेड के एक नंबर पेन में यह फीड लगना था। शाम को देखा गया हर शेड के एक नंबर पेन में कुछ कच्चे अंडे आये हैं, परन्तु प्रोडक्शन बढ़ा हुआ है। निर्णय लेना मुश्किल हो रहा था। तय हुआ कल सुबह दुबारा सारे एक नंबर पेन चेक करते हैं। बिना छिलके अंडे बढ़ गए और छिलका भी कमजोर हो गया है। तुरंत फीड स्टोर को मना कर दिया यह दाना इशू न करे। जो सबका चल रहा है वही भेजें। कंपनी को फोन किया। कई लोग आ गये। स्वर्गीय डॉक्टर मुहियुद्दीन ने कहा कि नमक ज्यादा है। उन्होंने स्वयं दोनों फीड चखा, काफी फरक था। उनके स्टाफ ने भी चखा और माना के गलती से D.C.P. की जगह नमक पड़ गया है, जो प्रीमिक्स में था। फीड वापिस गयी।

सन् 1990 में एक न्यूट्रिशन पर सेमीनार ताज महल होटल, दिल्ली में आयोजित हुआ। अपने ढंग का शायद पहला अनूठा सेमीनार था जिसमे उस समय के लगभग सभी न्यूट्रिशनिस्ट ने भाग लिया। इस सेमीनार को NATIONAL RENDERERS ASSOCIATION (NRA), CLFMA एवं U.S. FEED GRAIN COUNCIL ने मिलकर आयोजित किया था। इसमें विज्ञानिको के लगभग सभी भाषण ज्ञानवर्धक थे, जिसका जिक्र धीरे–धीरे आगे होता रहेगा। वहां जो नमक पर बात हुई, बस उसी का जिक्र कर रहा हूँ।

स्वर्गीयर Dr. BS RAO उस समय के बहुत मशहूर वैज्ञानिक ही नहीं थे, बल्कि बहुत प्रैक्टिकल थे। अपनी सोच में, अपने कार्य में। दुनिया के मशहूर अफ्लाटाकिसन विशेषज्ञ माने जाते थे। उन्होंने इसी विषय पर U.S.A. से P.hd की थी। इस विषय पर उनके रिसर्च पेपर की आज भी मान्यता है। काफी समय तक भारत सरकार के बंगलौर स्थित पोल्ट्री रिसर्च एवं ब्रीडिंग फार्म के डायरेक्टर रहे और उसके बाद काफी समय JOINT COMMISSINER पोल्ट्री कृषि मंत्रालय भारत सरकार में थे।

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

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उन्होंने कहा कि "हम फिश में अधिक नमक होने के कारण SALT TOXICITY से तो परेशान हैं ही, काफी शोर–शराबा होता है। परन्तु राइस–पोलिश या ब्रान में भी नमक मिलाया जाने लगा है। राइस–पोलिश या ब्रान हम नमक के लिए टेस्ट करते नहीं हैं, जब टेस्ट किया गया तो हमें आश्चर्य हुआ और चकित हुए। कई सैंपल नमक से लोडेड थे"। यह शुद्ध एडल्ट्रेशन का मामला है। यह सब बातें सुनकर हम सभी चकित हुए। नमक उस समय एक रूपए किलो या उससे भी कम रहा होगा। जहाँ अधिक नमक से टॉक्सिटी होती है, वहीं इसकी एक और खतरनाक 'तासीर' है, जो हवा की नमी को अब्सॉर्ब करता है जिससे बोरी का वजन तो बढ़ता ही है और अधिक नमी बढ़ जाने के कारण दूसरी समस्याएं भी हो सकती है, जैसे फंगस या टॉक्सिन।

यह एक और एडल्ट्रेशन का माध्यम मिल गया है, हमारे "डकैतों" को। अतः हमें आगे के लिए सचेत रहना होगा और ऐसे प्रोडक्ट जिसमे मिलाये जाने की सुगम एवं सरल सम्भावना है, उनमे नमक भी चेक करवाना चाहिए। अब तो ऐसे बहुत से इंग्रेडिएंट्स हैं जैसे एम. बी. एम. , राइस पोलिश, सोयामील, डी. सी. पी., डी. डी. जी. एस. इत्यादि जिनमे साल्ट की मिलावट हो सकती है या की जा सकती है। बस सचेत रहें और टेस्ट करवाते रहें।

एनकाउंटर न0 263–हम मक्खियों को आश्रय देकर कितना बड़ा नुक्सान उठा रहे हैं ?

जुलाई आ रहा है मक्खियों का ब्रीडिंग फार्म बन जायेगा, हमारा पोल्ट्री फार्म। शेडों में, फीडरों में, जहाँ साया या ठण्ड होगी वहां यह झुण्ड में मिलेगी। यहाँ तक कि शेड के पास पेड़ों के तनों पर भी अपनी पंचायत करती हुई मिलेगी। पहले भी इस पर आर्टिकल लिख चूका हूँ परन्तु हम किसानों का इस पर कोई विशेष ध्यान नहीं गया है या उन्होंने इस गंभीर समस्या पर कोई विशेष ध्यान नहीं दिया है।

मक्खी द्वारा होने वाले नुकसानों की यदि आप सही गिनती कर लें तो विचलित हो जायेंगे। इनके द्वारा उत्पन्न होने वाली कुछ प्रमुख समस्याओं का विवरण दे रहा हूँ।

- इनका प्रजनन बहुत तेज है। 10–12 घंटे में झुण्ड में अंडे दे देती हैं। इनकी तेजी से बढ़ती हुई फौज पर ध्यान न दिया गया तो फार्म पोल्ट्री के साथ मक्खी ब्रीडिंग फार्म बन जायेगा। इस कारण आपका जो नुक्सान होगा उससे पहले आपको बता दें कि आपके फार्म के आस–पास गॉव तक फौज के रूप में अपना प्रसार कर लेगी। इस कारण गॉव के लोग परेशान होंगे और इसकी शिकायत जिला अधिकारी तक जा सकती है। फलस्वरूप आपको अपना फार्म बंद भी करना पड़ सकता है। पश्चिमी उत्तर प्रदेश में एक बहुत बड़ा लेयर फार्म मक्खियों के कारण बंद करवा दिया गया। हरियाणा स्थित शहर बरवाला पोल्ट्री का बहुत बड़ा सेन्टर है। उन्हें जिला अधिकारी ने आदेश दिया था कि "अपने फार्म पर मक्खियों का प्रजनन बंद करे और साथ ही पास के गॉव में भी स्प्रे करें अन्यथा फार्म बंद करे"। कई साल तक यह मुहीम चलती रही। अब क्या हाल है पता नहीं?
- यह मक्खियां देखने में बहुत छोटी परन्तु भयावह रूप में खतनाक हैं। यह सदैव दाने और खुले पानी को कंटेमिनेट करती रहती हैं। जहाँ यह बीमारियां फैलाने में चाहे, वह वायरल, बैक्टीरियल, या प्रोटोजोआन हो, यही नहीं चाहे 'वर्म' (पेट के कीड़े) हों, सक्षम हैं। साथ ही फ्लॉक में जबरदस्त स्ट्रेस (तनाव) पैदा करने में बहुत सक्षम हैं जिसका हमें अंदाजा भी नहीं होता है। बीमारियां तो निश्चित रूप से आपके लाभ को नुक्सान में तब्दील कर देती हैं। तनाव या स्ट्रेस आपको दिखता नहीं परन्तु इसके कारण भी फीड खपत में कमी, अंडे के उत्पादन में कमी, वजन में कमी के कारण काफी नुक्सान पहुँचता है। आपके गाल या नाक पर एक मक्खी बैठ जाए तो आपको कितनी 'इरिटेशन' होती है, यदि होश में नहीं रहे तो शायद अपने को थप्पड़ मार लें। अक्सर आपने देखा है मुर्गियां लाइन में अपनी गर्दन 'झटकती' रहती है। कुछ लोग इसे CRD समझते हैं पर सदैव ऐसा नहीं है। यह जब मक्खी उनकी कलगी, वैटल, आँख या नाक पर बैठती या रेंगती है तो झटकती है, इस इरिटेशन के कारण जो स्ट्रेस को जन्म देता है उत्पादन क्षमता पर काफी असर पडता है। इस कारण से उत्पादन घटने के विषय में हमारे 'मैनेजमेंट बुक' में कोई चैप्टर नहीं है।
- इस बात को समझ लेना बहुत महत्वपूर्ण है यह जहाँ पोल्ट्री में बीमारी फैलाने में सक्षम हैं वहीं इंसानों में बीमारी फैलाने में भी सक्षम हैं। यही नहीं पोल्ट्री से मनुष्य में और मनुष्य से पोल्ट्री में भी बिमारी फैलाने में सक्षम है। इसमें ND, साल्मोनेला एवं इ कोलाई इत्यादि प्रमुख हैं।
- एंटी माइक्रोबियल रेजिस्टेंस बैक्टीरिया चाहे वह इ कोलाई हो, साल्मोनेला या कोई और बैक्टीरिआ हो, अगर इसने आपके फ्लॉक में पहुंचा दिया या इंसान को दिया तो बीमारी का रूप धारण करने के बाद ट्रीटमेंट बिना 'सेंस्टिविटी' टेस्ट किये जोखिम भरा होगा।
- यह गन्दगी बहुत पसंद करती है। वहीं अधिकाँश मक्खियां अंडा देती हैं। उसके बाद इन्हे अंडे की फिक्र नहीं होती है – यह अपने आप मैगेट, लारवा आदि की शक्ल अखतियार कर पूरी मक्खी बन जाती है – इस प्रकार इनका प्रजनन बहुत तेजी से होता है। अक्सर देखा गया है विशेष रूप से ब्रायलर में जहाँ वेंट के पास यदि बीट चिपक रही है तो यह वहीं अंडा देती है और मैगेट बनकर शरीर के अंदर भी पहुंच जाती है और ब्रायलर की मृत्यु होने लगती है।
- जब गन्दगी की बात की जा रही है तो विशेष रूप से जिन फार्मों की बायोसिक्योरिटी या हाईजीन ना के बराबर है वहां इनका प्रकोप बहुत अधिक है। लीटर या खाद सदैव शेड में उपलब्ध हैं यदि सही ढंग से नहीं रखा गया तो यह उनका सबसे बड़ा ब्रीडिंग स्थान है। इसके अतिरिक्त शेड की सफाई या शेड के बाहर की सफाई में कमी है तो यह उनके लिए ब्रीडिंग बेड है। टूटे हुए अंडे या मोर्टिलिटी का डिस्पोजल सही नहीं हो तो यह भी उनके लिए उचित ब्रीडिंग स्थल है। सारांश वह सभी गन्दी जगह या सड़न जहाँ भी हो, वह सभी इनके लिए उपजाऊ है।
- इन बातों के अतिरिक्त शेड में जो जो लोहे या एल्युमीनियम के पोल्ट्री के साज और सामान जैसे फीडर, ड्रिंकर, केज इत्यादि उनकी लाइफ को यह मक्खियां कम करती हैं। यह उन पर बैठती हैं, बीट करती है जिसमे यूरिक एसिड होता है जो करोसिव होने के कारण इन साज–सामान की उम्र कम करता है।
- भले ही अण्डों में कोई भी फैलने वाली बीमारी न मिले जिसकी शेल के अंदर मिलने की सम्भावना रहती है निश्चित रूप से भारत में ऐसा कुछ नहीं मिला है परन्तु खेद है ऐसे स्वच्छ अंडे के छिलके पर मक्खियों की बीट बिंदी के रूप में मिलना हानिकारक हो सकता है जो मिलता रहता है परन्तु हम इसके लिए बिलकुल चिंतित नहीं है। अंडे सदैव सेनिटाइजर से वाश करके ही उपभोक्ता को दिए जाने चाहिए।

VAXXITEK®
HVT+IBD+ND

FROM THE TRUSTED LEADER IN
IBD VECTOR VACCINE TECHNOLOGY

DESIGNED FOR YOU

- **3 in 1** Strong immune foundation and optimized protection against Marek's, Infectious Bursal, and Newcastle diseases[1]
- Early onset and long duration of immunity[1]
- Demonstrated safety through the absence of death or severe respiratory clinical signs[1]
- **VII** Genotype VII ND insert
- **XXI** Powered by the manufacturer of VAXXITEK HVT + IBD

Reference: 1. Data on file. Boehringer Ingelheim Animal Health.

Bursal Disease-Marek's Disease Newcastle Disease Vaccine, Serotype 3, Live Marek's Disease Vector

Vaxxitek HVT+IBD+ND

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

Composition: Each dose of vaccine contains: MD vectored IBD & ND recombinant virus, Serotype 3- At least 5695 pfu, DMSO/Freezing Solution- 7.5 %, Freezing Media-1 dose q.s., Penicillin <= 30.0units/mL, Streptomycin <= 30.0 mcg/mL, Amphotericin B <= 2.5mcg/mL, calf serum 15 % **Indication:** This product has been shown to be effective for the vaccination of healthy 18 to 19-day-old chicken embryos and one-day-old chickens against standard and variant bursal disease, Newcastle disease and Marek's disease. **Dosage and administration:** In ovo Administration: Use two hundred (200) mL of sterile diluent is used for each 4,000 doses of vaccine to be administered in ovo. Dilute the vaccine only as directed. Inject a 0.05 mL dose into each embryonated egg. Use entire contents of the vaccine container within one hour after mixing the vaccine with diluent. Subcutaneous injection: Use 200 mL of sterile diluent for each 1,000 doses of vaccine to be injected subcutaneously. Inject chickens under the loose skin at the back of the neck (subcutaneously), holding the chicken by the back of the neck just below the head. The loose skin in this area is raised by gently pinching with the thumb and forefinger. Inject 0.2 mL per chicken. Avoid hitting the muscles and bones in the neck. Use entire contents of the vaccine container within one hour after mixing the vaccine with diluent. **Age-** Day old chickens and 18 days embryonated eggs. **Pregnancy and Lactation:** Not applicable **Contraindications:** Do not vaccinate diseased embryonated eggs or diseased birds. **Special warnings and precautions:** Do not mix the vaccine with other vaccines or veterinary medication. Use the entire contents of the vaccine container within one hour after mixing the vaccine with diluent. Use entire contents when first opened. Do not vaccinate diseased embryonated eggs or diseased chickens. Avoid contact with eyes, hands and clothes when using the vaccine. **Adverse reactions:** None known. **Shelf Life and Storage:** Shelf life is 18 months. AMPULES: Store in liquid nitrogen container. DILUENT: Store at room temperature. **MAH Holder:** - Boehringer Ingelheim India Pvt Ltd, Unit No. 202 and part of Unit no. 201, 2nd Floor Godrej 2, Pirojsha Nagar, Eastern Express Highway, Vikhroli (E) | Mumbai 400079.

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"Additional information is available on request."

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PREVENTION WORKS
Shaping the future of poultry health

Boehringer Ingelheim

अब बात करते हैं मक्खियों की ब्रीडिंग को फार्म पर कैसे रोका जाए ?

- फार्म की बायोसिक्योरिटी एवं हाईजीन पर ध्यान दिया जाए।
- मौसम का इनकी ब्रीडिंग एवं रफ्तार में बड़ा योगदान है। गर्म एवं आर्द्रता (HUMID) वाले मौसम में ही इनकी सबसे ज्यादा ब्रीडिंग होती है।
- लीटर या खाद का उचित न होना सबसे ज्यादा जिम्मेदार है।
- अब बहुत से अच्छे फीड में मिलाने वाले सुरक्षित केमिकल आ गये हैं। जो पक्षी को नुक्सान नहीं पहुंचाते परन्तु उनकी 'बीट' के जरिये बाहर निकल जाते हैं और जब ऐसे लीटर पर मक्खियां अंडे देती हैं तो वह पनप नहीं पाते, अतः इनकी पापुलेशन बहुत तेजी से घटती है। इसका लगातार उपयोग कम से कम 6 सप्ताह करना पड़ता है एवं कुछ अंतराल के बाद पुनः यह कोर्स करना पड़ता है। जब उनके ब्रीडिंग के विपरीत मौसम आ जाता है तो लम्बा अंतराल ले लेते हैं।
- केमिकल स्प्रे भी कई आते हैं जिनमे कुछ बहुत अच्छे हैं परन्तु काफी सावधानी बरतनी पड़ती है। इस्तेमाल से पहले ध्यानपूर्वक उसका पूरा लिट्रेचर पढ़ लें। आमतौर से यह प्रतिदिन या एक दिन छोड़ कर स्प्रे करना पड़ता है।
- अब हर्बल स्प्रे भी आने लगे हैं जिनमे से कुछ काफी सुरक्षित भी हैं और कारगर भी है। एक स्प्रे 7 दिन तक मक्खियों को मारता रहता है। यह काफी सस्ता भी पड़ता है।
- एक–दो कंपनियां केमिकली मेडिकेटेड डोरियां भी लाई हैं। इन्हे जगह–जगह शेड के अंदर बाँध दीजिये। मक्खियां इससे आकर्षित हो कर बैठना पसंद करती हैं। मरती रहती है और नीचे गिरती रहती हैं।
- जगह–जगह शेड में बोरियां रख कर उस पर चीनी या गुड़ छिड़क दें। इस पर हेर्बल या केमिकल मक्खी की दवा छिड़क दें। इस पर मक्खियां आकर मरेंगी। जब सूखने लगे तो हल्का पानी छिड़क दें। कई दिनों तक यह कारगर रहेगा।

इस प्रकार आप मक्खियों के खिलाफ जिहाद छेड़ सकते हैं और अपने आपको एवं फार्म के साथ उपभोक्ता को सुरक्षित रख सकते हैं।

एनकाउंटर न0 264– पोल्ट्री मैगजीनों का वजन बढ़ता जा रहा है परन्तु रीडिंग मटेरियल कम होता जा रहा है – क्यों ?

कोरियर वाला जब मैगजीन हाथ में देता है तो सोचता है कि यह बहुत सीरियस आदमी होगा जो लगभग 600 ग्राम की मैगजीन मंगवाता है। एक ने उत्सुकता में पूछा "क्या यह किताब मैं देख सकता हूँ"? मैंने कहा "तुम्हीं खोलो"। उसने खोला और जल्दी–जल्दी पन्ने पलटे – रंग बिरंगे ऐड देखे – रंग बिरंगी बहुत सी फोटोओं की भीड़ को देखा और कहने लगा "अति सुंदर"। मैंने मुस्कुरा कर मैगजीन पकड़ी वह चला गया और मैं भी पन्ने पलटने लगा। सचमुच आज मुझे भी बहुत सुंदर लगने लगी। इसी तरह रंग बिरंगी छप कर आती है, परन्तु उसके तारीफ करने के बाद और अधिक सुंदर लगने लगी। जो पन्ना देख कर उसने अति सुंदर कहा था मैगजीन देते समय खुला रह गया था जिसमे एक बड़े साइज की फोटो लगी थी जिसमे कई लोगों के गले में 'वरमाला' पड़ी थी जैसे अभी–अभी 'स्वयंवर' हुआ हो?

मेरा मानना है कि ऐड मैगजीन को जिन्दगी प्रदान करता है और कुछ ऐड ऐसे होते हैं जो हमारे और हमारे जैसे लोगों का ज्ञान भी बढ़ाते हैं। काफी कुछ इनसे सीखने को मिलता है। लेकिन जो मैगजीन में लाइन से पोल्ट्री सेमीनार या कॉन्फरेन्सेस का रंग–बिरंगी फोटोओं का मेला लगा होता है, जैसे कुम्भ का मेला लगा हो, इसका क्या औचित्य है ? उसमे जो ऑर्गनाइजर है या जो महत्वपूर्ण स्पीकर है उनको तो हम जानते पहचानते हैं और बाकियों के बारे में न के बराबर में जानकारी है। दो–तीन फोटो ग्रुप में उनकी डाल दें – बाकी जगह में जो एक्सपर्ट ने बात बताई है उसका 'सारांश' प्रस्तुत कर दें। इससे जहाँ ज्ञान फैलेगा वही मैगजीनों की उपयोगिता और साख बढ़ेगी।

दुःख हुआ जब उसके शब्द 'अति सुंदर' सुनकर– मैं हर पन्ने की समीक्षा करने लगा। 184 पेज में कुल 16–17 पेज पोल्ट्री की आवश्यकता अनुसार लेख थे, उसमे भी कुछ कंपनियों के लेख थे। यह भी इंडस्ट्री के लिए अच्छे हैं और आवश्यक भी हैं। फोटो सेशन को श्रेय मिला था वह लगभग 60 पेजों का था। खबर और मेले की फोटो के सिवा हमें यानि किसानों को कुछ भी नहीं मिला। कभी–कभी तो एक ही व्यक्ति की फोटो अलग–अलग लोगों के साथ चिपकी रहती है। यह शौक है – इतनी तो मोदी जी की भी नहीं दिखती है। मुझे याद है भारत की पहली मैगजीन पोल्ट्री गाइड में 10–15 लेख हुआ करते थे।

सभी संपादक महोदय से आग्रह है कि अपनी मैगजीनों में रीडिंग मटेरियल जो पोल्ट्री फार्मर्स के लिए लाभप्रद हो उसको बढ़ाये। बकरीद में जब बकरा हलाल होता है तो यह आवश्यक है कि 33 प्रतिशत गरीबों को दें – 33 प्रतिशत दोस्तों–पड़ोसियों को और 33 प्रतिशत खुद खा सकते हैं। भाइयों हम किसानों को 33 प्रतिशत रीडिंग मटेरियल और 66 प्रतिशत ऐड और अपने दोस्तों में बाँट लें।

रहा लेखों का सवाल तो देश में तजुर्बेकार वैज्ञानिक एवं फील्ड विशेषज्ञों की कमी नहीं। वह फील्ड से जुड़े अहम् मुद्दों पर प्रकाश डाल सकते हैं जो हम जैसे अज्ञानियों के लिए बहुत महत्व का होगा। कोई संपादक अपने मैगजीन में इन लेखकों को आमंत्रित नहीं करता है एक छोटा सा ब्लॉक डाल कर। जरा करके देखें शायद लेखों की भीड़ लग जाए और आपको छांटना पड़ जाए।

फोटो के मामले में करनाल पोल्ट्री एसोसिएशन की सराहना करनी होगी। हर महीने उनकी मीटिंग होती है। मात्र एक समूह की फोटो डालते हैं। बहर हाल बड़े सेमीनार की एक से काम नहीं चलेगा। 5–6 से काम चल जायेगा। स्टेज से ऑर्गनाइजर, स्पीकर, एक ऑडियंस और एक प्रतिभोज की फोटो डाल दें – हाँ यदि व्हिस्की चली हो तो उसकी भी डाल दें। बाकी जगह स्पीकर ने जो कहा उसका सारांश डाल दें– यह अधिक महत्वपूर्ण है।

यह रंग–बिरंगी फोटोओं की भीड़ देखकर प्रधान मंत्री भी सोचते होंगे कि हमारे आते ही पोल्ट्री इंडस्ट्री कितनी 'खुशहाल' है ? क्या यह हकीकत है? जरा सारे संपादक महोदय छोटे–बड़े किसानों के बीच में कम से कम महीने में एक बार जाएँ –अंदर और बाहर से सभी दुखी हैं। आजादी के 75 साल बाद भी यदि हम जागरूक नहीं हुए तो कब होंगे ? यदि 'फोटो सेशन' की इतनी अपार भीड़ आ रही है तो अलग से एक सप्पलीमेंट प्रिंट कर दी जाए और उसके चार्जेज लीजिये। आगे कभी एडिटोरियल पर भी लिखुंगा–इसे भी बहुत ध्यान से पढता हूँ। किसी संपादक को या 'फोटो सेशन' वालों को बात बुरी लगी हो तो क्षमा याचना के बाद इस लेख को यही समाप्त करता हूँ।

Mr. Shabbir Ahmad Khan

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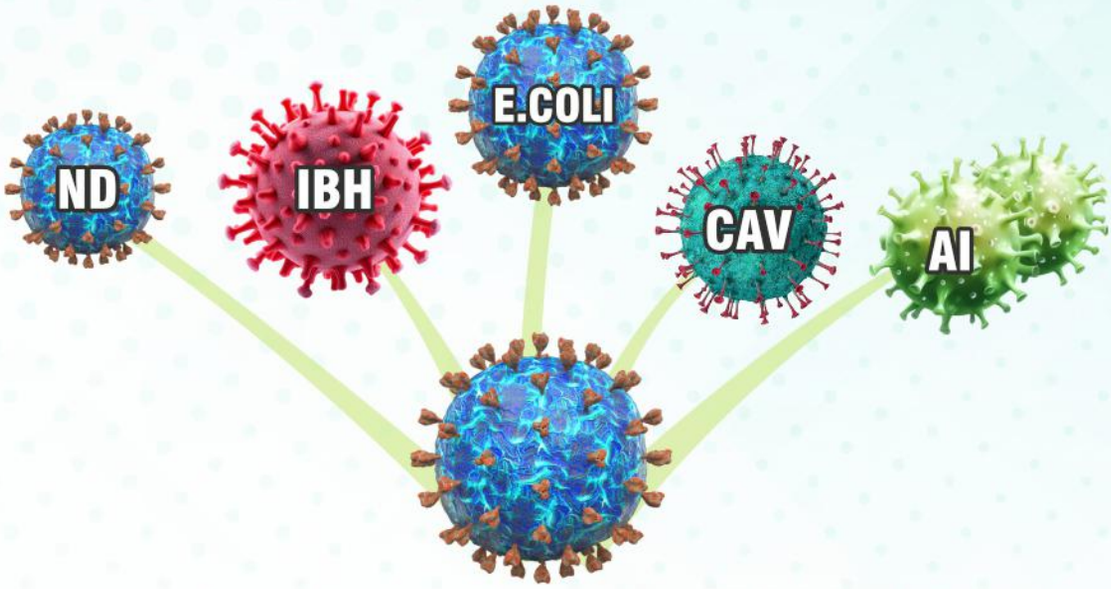

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Pest Management in Poultry:
A Critical Element of Biosecurity and Animal Welfare

Poultry production in India has grown in scale and complexity. Along with this growth, pest-related challenges have become more frequent and severe. High-density housing, continuous litter buildup, and increased feed storage create favourable conditions for pest buildup. These include house flies, rodents, darkling beetles, and other ectoparasite pests, which have a huge impact on the quality and quantity of poultry products.

Such pests pose threats to bird health, productivity, structural integrity, and biosecurity. An effective, structured pest control program is necessary to ensure sustained performance and safety in poultry operations.

By Dr. Ashish Dokras
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Key Habitat Pests in Poultry Production

Pests found in and around poultry environments can have significant direct and indirect impacts. Two major pests that are responsible for the spread of different types of diseases in poultry include house flies and rodents.

Table 1: Habitat Pests and Their Impact on Poultry

Pest	Impact
House flies (Musca domestica)	• Transmit more than 100 pathogens, including bacteria, protozoa, viruses, fungi, and helminths
	• Spread contamination from manure to feed and water
	• Cause stress and discomfort in birds
	• Spoil egg quality and affect worker hygiene
Rodents (Rattus, Bandicota spp.)	• Damage insulation, wiring, and feed packaging
	• Spread over 45 zoonotic diseases
	• Contaminate feed and water supplies
	• Kill young chicks and create biosecurity breaches
	• Spread viral, bacterial, and protozoan diseases such as IBDV, Marek's disease, NDV, Salmonella, E. coli, and coccidiosis

House Flies as High-Impact Vectors

House flies reproduce rapidly, completing their life cycle in 7 to 10 days under warm, humid conditions. Poultry sheds offer ideal breeding sites due to manure accumulation and persistent moisture.

These flies carry pathogens such as Salmonella spp., Campylobacter spp., Escherichia coli, and Staphylococcus aureus. They contribute to disease outbreaks and product contamination. High fly populations can also lead to odour issues, community complaints, and operational disruptions.

Monitoring Fly Load Before Intervention

Monitoring pest levels helps identify when intervention is necessary. It also prevents overuse of insecticides and supports evidence-based decisions.

Recommended monitoring tools:

- **Spot cards** are placed in sheds to track fly activity
- **Baited traps** to monitor adult fly populations
- **Scudder grids** are used to count flies in designated areas

Integrated House Fly Management Approach

Effective control relies on a combination of practices that work together. These include:

1. Cultural control
2. Mechanical control
3. Biological control
4. Chemical control

Consistency and timely execution are essential across all these areas.

1. Cultural Control

Environmental hygiene practices directly influence pest breeding and survival.

- **Remove manure** regularly and store it in covered, fly-proof structures
- **Trim vegetation** near sheds and dispose of it properly
- **Avoid feed spills** and store feed in sealed containers
- **Promptly dispose of bird carcasses** by incineration or deep burial
- **Repair water leaks** to keep the litter dry
- **Maintain ventilation** to prevent litter moisture buildup

2. Mechanical Control

Physical tools help reduce fly entry and manage populations within sheds.

- Install **mesh screens** with 0.88 to 1.22 mm apertures on openings
- Use **insect light traps** with **glue pads** away from birds
- Seal structural gaps and monitor trap effectiveness regularly

3. Biological Control

Natural enemies of flies exist, but their use in Indian poultry operations is limited.

- **Parasitoid wasps** such as *Spalangia* and *Muscidifurax* can be used to suppress larvae, but they have limited effectiveness
- The field effectiveness of natural enemies is often reduced due to frequent pesticide application, high temperatures, ammonia, and inconsistent supply

Biological controls can support other measures, but cannot be relied on alone.

4. Chemical Control

Chemical interventions remain necessary in most operations. Their success depends on correct product selection, application, and rotation.

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Table 2: Insecticide Misuse and Consequences

Misuse	Consequences
Use of unapproved agrochemicals	Inconsistent results, toxicity, and residue violations
Incorrect dose or frequency	Resistance development, ineffective control, waste of resources
Mixing incompatible products	Unstable chemical reactions, increased toxicity risks
Over-application	Loss of natural predators, increased resistance, unnecessary costs

Selecting and Applying Insecticides

Larvicides

Feed-through larvicides such as cyromazine 10% premix:

- Effective in caged layer systems
- Pass through the bird into the manure
- Require a 3-day pre-slaughter withdrawal period for spent fowl
- Treated manure should not be used on edible crop fields

Surface-applied larvicides such as Diflubenzuron 25% WP:

- Applied to manure or litter
- Best to include IGRs as they are mimics of natural compounds
- Development of resistance is not common
- Disrupt the insect's moulting process

Adulticides

Use products with dual modes of action for fast and residual control.

Temprid SC (imidacloprid 21% + beta cyfluthrin 10.5%):

- Acts through contact and ingestion
- Slows resistance development
- Suitable for scheduled rotation programs

Application tips:

- Apply on fly-resting surfaces such as walls, ceilings, and support structures
- Do not apply directly to birds
- Use a diluted solution at 50 ml/m^2
- Rotate active ingredients periodically

Worker Safety and Handling

Chemical application must be supported by operator safety protocols.

- Wear gloves, face shields, coveralls,
- Keep chemicals away from feed, water, and birds
- Ensure proper dilution and use only designated application tools
- Allow treated areas to dry before re-entry
- Train all applicators in safe handling procedures

Bait and Space Spray Options

Quick Bayt (imidacloprid 0.5% RB):

- Apply as a paint-on or bait strip in non-bird zones
- Contains attractants that draw and kill adult flies
- Do not apply near feed or water sources

Space sprays:

- Reserved for outbreak situations
- Use water-based, odorless formulations
- Avoid products requiring fogging or petroleum-based carriers

Table 3: Insecticides for House Fly Management

Product	Active Ingredient	Dose	Application Rate	Notes
Bi-Larv WP	Diflubenzuron 25% WP	5 g in 5 L water	2 L/sq.m	Surface larvicide
Temprid SC	Imidacloprid + betacyfluthrin	4 ml/L water	50 ml/sq.m	Dual-action adulticide
Aqua K-Othrine	Deltamethrin 2% EW	50 ml in 1 ltr. Water	ULV fogging: 50 ml per Hectare	Apply during high activity periods
Quick Bayt	Imidacloprid 0.5%	RB200 g + 150 ml water	150 ml/100 m^2	For bait strips or panels only

Operational Value of Integrated Pest Management

Uncontrolled fly populations reduce productivity, impact bird health, and threaten product acceptance. Eggs and meat may face rejection due to contamination or residue risk. Feed waste, medication costs, and downtime from disease outbreaks also rise.

Consistent implementation of integrated fly management improves feed conversion, reduces mortality, and helps maintain biosecurity and brand trust. Over time, this lowers operating costs and enhances farm resilience.

Conclusion

Poultry pest management requires structure, consistency, and informed execution. House flies and rodents present different risks and require a coordinated response. A science-based IPM approach supported by monitoring, hygiene, and safe chemical use ensures long-term control. This helps maintain bird health, protect output quality, and support the commercial viability of farm operations.

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What Can Go Wrong in Mycotoxin Testing - and How to Prevent It

Cristian Ilea
Director Marketing & Product Management Romer Labs.

Mycotoxins are toxic secondary metabolites produced by fungi such as Aspergillus, Fusarium, and Penicillium, which commonly contaminate agricultural commodities. These toxins - including aflatoxins, deoxynivalenol (DON), zearalenone, fumonisins, ochratoxin A, and T-2/HT-2 toxins - pose both acute and chronic health risks, ranging from hepatotoxicity and carcinogenicity to immune suppression and reproductive toxicity.

According to the Food and Agriculture Organization (FAO), up to 25% of global food crops may be significantly contaminated with mycotoxins, although occurrence rates in specific commodities and regions can be much higher. Given the strict regulatory limits imposed by authorities such as the European Commission - particularly under Regulation (EU) 2023/915 - robust mycotoxin testing is essential to ensure food and feed safety, maintain market access, and achieve regulatory compliance.

However, mycotoxin testing is inherently complex due to the heterogeneous distribution of toxins, diversity of sample matrices, and environmental conditions that influence fungal growth. This article examines five critical pitfalls in mycotoxin testing - improper sampling, inadequate storage and transportation, poor sample preparation, matrix effects, and test execution errors -and provides evidence-based strategies to address them.

Pitfall 1: Improper Sampling

The Challenge of Uneven Distribution

A primary source of error in mycotoxin testing stems from the uneven distribution of toxins within bulk materials. Unlike uniformly distributed nutrients such as protein or starch, mycotoxins often occur in highly localized "hot spots." A single grab sample is thus insufficient to represent an entire lot. For example, a feed mill once approved a corn shipment based on preliminary tests showing low aflatoxin and fumonisin levels. However, after incorporation into broiler feed, poor flock performance prompted further investigation, revealing high fumonisin concentrations - ultimately traced to non-representative sampling.

To illustrate the scale of this issue: you typically analyse a 10–50 g test portion, yet this must accurately reflect a batch that may weigh up to 50 metric tons. Failure to capture the full variability of the batch can result in either false negatives (missing contamination) or false positives (overestimating contamination).

Solutions for Effective Sampling

Standardized, multi-point sampling protocols are essential. Regulatory frameworks such as the USDA's Federal Grain Inspection Service (FGIS) Mycotoxin Handbook and the European Union's Commission Regulation (EU) No. 2023/2782 outline sampling plans tailored to different commodities and lot sizes. Best practices include:

- **Determine Sample Size**: Use regulatory guidelines to calculate the number of incremental samples based on batch size and expected variability.
- **Collect Incremental Samples**: Obtain small, equally sized samples from different points—during transfer (e.g., loading spouts) or at varying depths in silos or storage piles.
- **Create an Aggregate Sample**: Combine the incremental samples into a homogeneous aggregate, and then reduce it (e.g., via riffle splitting) to obtain the final analytical portion.

For instance, the USDA recommends sampling flat-bottom trucks at multiple evenly spaced points across length, width, and depth using a probe. Additionally, tools such as the FAO Mycotoxin Sampling Tool (an Excel-based decision aid) can help design statistically sound plans for various commodities and risk levels.

By following such protocols, testers can ensure that samples are representative, minimizing the risk of inaccurate results. Studies have shown that sampling error can account for more than 80% of total uncertainty in mycotoxin testing (Whitaker & Dickens, *J. AOAC Int.*, 2004), underscoring the critical importance of this step.

Pitfall 2: Inadequate Storage and Transportation

The Impact of Storage Conditions

Even after accurate sampling, mycotoxin levels may rise during storage and transport if environmental conditions are suboptimal. A grain trader, for example, conducted lateral flow tests on incoming shipments and found low toxin levels. However, follow-up analyses by external labs revealed elevated contamination in stored lots. The root cause: poor storage practices.

Key environmental risk factors include:

- **Moisture Content**: Grain moisture >14% fosters fungal growth.
- **Temperature**: Warm conditions (25–35°C) accelerate both mold growth and toxin production.
- **Spore Load**: Pre-existing spores of *Fusarium* or *Aspergillus* can begin producing mycotoxins within days.
- **Poor Aeration**: Localized "hot spots" due to compaction or poor airflow can create ideal microenvironments for fungal proliferation.

These factors can cause rapid increases in mycotoxin levels, sometimes within days, rendering initial test results obsolete.

Strategies to Mitigate Storage Issues

To minimize post-harvest mycotoxin production:

- **Maintain Dry Conditions**: Keep grain moisture below 14%, ideally below 13% for long-term storage.
- **Control Temperature**: Maintain storage temperatures under 25°C where possible.
- **Monitor and Aerate**: Use sensors to monitor grain temperature and moisture and implement regular aeration to prevent hot spots.
- **Perform Spot Checks**: Perform periodic testing during storage to detect changes in mycotoxin levels early.

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- VITAMIN D3 500 FEED GRADE
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- **Combine Testing Methods**: Use rapid screening tools (e.g., lateral flow devices) and confirmatory techniques (e.g., LC-MS/MS) for high-value or borderline lots.

Continuous monitoring and documentation of storage conditions can help identify trends and enable rapid responses to rising contamination levels.

Pitfall 3: Inadequate Sample Preparation

The Role of Grinding and Particle Size

Sample preparation - particularly grinding - directly affects extraction efficiency and test result reliability. In one documented case, a feed mill consistently underestimated mycotoxin levels with lateral flow tests compared to external LC-MS/MS results. The discrepancy was traced to inconsistent grinding, resulting in heterogeneous particle sizes and incomplete toxin extraction.

Many mycotoxins - such as aflatoxins and fumonisins - are concentrated near the outer layers of kernels. Uniform grinding increases the exposed surface area and improves solvent penetration during extraction. Coarse or inconsistent particles may trap toxins, leading to underestimation or false negatives.

Best Practices for Sample Preparation

To optimize sample preparation:

- **Grind to the Right Particle Size**: Follow kit manufacturer guidelines, typically requiring 95% of the ground sample to pass through a 20-mesh (0.84 mm) sieve.
- **Use Proper Equipment**: Employ well-maintained grinders with sharp blades and calibrate regularly.
- **Verify Consistency**: Implement QC checks such as sieve analysis or duplicate testing.
- **Train Operators**: Ensure staff are trained in standardized grinding procedures, especially during high-volume periods.

These steps enhance extraction efficiency and improve the reliability of test results.

Pitfall 4: Matrix Effects

Interference from Complex Matrices

Matrix effects occur when components like fats, proteins, and oils in a sample interfere with test performance, particularly in rapid assays like lateral flow devices. In one instance, a poultry integrator's on-site tests yielded inconsistent results compared to LC-MS/MS analysis, due to matrix interference in finished feed.

Finished feeds are especially challenging due to their diverse formulation. Additives, binders, and varying moisture or fat contents can affect extraction efficiency and assay performance, leading to false negatives or inconsistent results.

Shifting Focus to Raw Material Testing

Rather than relying solely on testing finished feed, which provides insights only after production, testing raw materials enables proactive risk management. By screening incoming grains, producers can:

- Mitigate Risk: Reject or divert contaminated lots before processing.
- Apply Corrective Measures: Adjust formulations or add mycotoxin binders or deactivators to further mitigate risks.
- Simplify Validation Efforts: Raw materials are often validated matrices in rapid test kits, unlike complex finished feeds where the variability in formulations make universal protocols difficult.

While finished product testing may still be required for regulatory or customer purposes, raw material testing provides earlier and often more reliable insights.

Pitfall 5: Test Execution Errors

Errors Under Pressure

Even the most accurate test method can yield unreliable results if improperly executed. During peak harvest season, for instance, rushed personnel at a feed intake site skipped incubation steps and improperly timed reactions - resulting in false negatives for aflatoxin. The contaminated corn was later rejected by a downstream processor.

Small changes, such as altering incubation times or centrifugation steps, improper reagent volumes, using expired kits or cross-contamination between samples can significantly compromise test accuracy, especially under high-pressure conditions.

Ensuring Test Accuracy

To reduce user error:

- **Adhere to Protocols**: Follow manufacturer guidelines precisely and avoid improvisation unless validated with the supplier.
- **Validate Changes**: Work with test kit manufacturers to confirm that any protocol adjustments maintain accuracy.
- **Train and Re-train: Offer periodic training and use visual SOPs or checklists.**
- **Use Controls**: Include positive and negative controls regularly.
- **Use Test Kits with Simple Workflows**: Opt for rapid test kits with streamlined procedures, such as automatic timing or result reading, to reduce operator error.

Conclusion

Reliable mycotoxin testing is critical for food and feed safety - but numerous pitfalls can compromise accuracy, from sampling and storage to test execution. By implementing standardized sampling protocols, optimizing storage and preparation, accounting for matrix effects, and rigorously adhering to test procedures, stakeholders can significantly reduce error and improve compliance.

Resources such as the USDA FGIS Mycotoxin Handbook, EU regulations, the FAO Mycotoxin Sampling Tool, and validated rapid test kits (e.g., AgraStrip® Pro WATEX®) offer practical, effective solutions. Moreover, integrating digital data management tools and traceable workflows can further enhance audit readiness and decision-making.

By proactively addressing these common pitfalls, food and feed producers can better protect both consumers and animals - and ensure safer products in an increasingly complex and regulated global market.

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Next-gen Technologies Revolutionising Animal Disease Diagnosis

In today's fast-moving tech world, a constellation of disruptive technologies are driving a digital revolution in animal health care. Many new technologies have quickly advanced the way animals are cared for. Innovations range from artificial intelligence (AI) designed for predictive diagnostics to Internet of Things (IoT)-based wearable devices that can monitor poultry, livestock and pets in real-time, and telemedicine enabling remote consultation to genomics aiding the formulation of personalized care routine. This is no longer science fiction—it's the emerging reality of next-gen animal health care.

New technologies are rapidly improving animal disease diagnosis, offering faster, more accurate, and more reliable methods. These advances include molecular diagnostics like PCR and Next generation sequencing (NGS), along with AI-powered tools for image analysis and predictive diagnostics. Additionally, biosensors and telehealth applications are expanding the range of diagnostic possibilities.

Such new technologies signify a new era in disease knowledge, in which discovering new information enabling more accurate predictions can lead to faster responses and greater control of potentially devastating disease crises.

The veterinarian also be prepared to use latest technological advancements with digital knowledge.

This article deals with some of the advancements taken place in animal disease diagnosis in digital technology in veterinary science.

Dr. R.N. Sreenivas Gowda

New technologies:

a) Sensor Technology

Sensors are the heart of modern poultry / dairy farm monitoring. These devices, when strategically placed, continuously collect data on body temperature, sounds, behavior movement, climate changes inside the poultry house can monitor the light intensity, level of humidity, CO2, and ammonia etc. and other critical parameters. Real-time information enables farmers to make informed decisions, ensuring optimal conditions for animals.

b) Wearable devices:

These devices allow for early diagnosis and smarter treatments that help improve the overall health and well-being of animals. Whether dairy cows on smart farms or domestic animals, technology and AI are transforming animal care, giving veterinarians, researchers, farmers, and animal owners access to more accurate, personalized, and predictive health care for animals.

c) Artificial Intelligence(AI) and Machine Learning(ML)

Artificial intelligence (AI) is a computer simulation of human intelligence processes, such as learning, reasoning, and self-correction, to solve a problem or perform a task. Instead of a brain, computers have algorithms, a series of step-by-step instructions for "thinking" about data inputs to achieve the desired goal.

AI has emerged as a game-changer, offering solutions that improve efficiency, productivity, and animal welfare. The Role of AI in Poultry Farming. AI-driven technologies provide farmers with powerful tools for disease detection, environmental control, feed optimization, and farm automation.

Machine learning is a subsection of AI where the algorithm isn't given a set of instructions, but rather trained on data to make decisions or predictions on its own.

AI powers numerous innovations in animal health care. It can examine intricate patterns from diagnostic images, genetic information, and even behavioral data through machine learning algorithms.

- **AI in veterinary medicine**: These AI algorithms can already outperform human specialists when interpreting X-rays and MRI or CT scans. Some algorithms can even discriminate fractures, tumors, or organ anomalies much faster than humans can, occasionally with improved accuracy.
- **Predictive analytics**: In livestock management, peripheral AI applications are capable of predicting disease outbreaks. For instance, in dairy farming, mastitis outbreaks can be predicted well ahead of time, allowing timely farmer intervention to avert escalation.
- **Chatbots and virtual assistants**: Some veterinary clinics have embraced AI-powered chatbots and virtual aides that are capable of triaging patients, managing appointment calendars, giving basic medical advice, and answering basic questions posed by clients.

d) IoT technology in animal health

Agriculture implements IoT through use of robots, drones, sensors, and computer imaging integrated with analytical tools for getting insights and monitor the farms. Placement of physical equipment on farms monitors and records data, which is then used to get valuable insights.

- **Wearable IoT devices for pets**: Smart pet collars and vests come with sensors that monitor a pet's vital signs such as heart rate, temperature, and levels of activities. If something goes wrong, an alert is sent to your veterinarian or your phone.
- An IoT sensor can detect changes in body temperature and other manifestations of disease in birds. Real-time data analysis enables farmers and company veterinarians to swiftly detect and respond to irregularities, and just as importantly, plan for potential outbreaks.
- **Livestock IoT devices**: Smart cattle ear tags, boluses, and ankle bracelets enable monitoring of herd health and aid in strategizing optimal feeding, fertility cycles, and disease management.
- **Environmental IoT monitoring**: Specialized sensors can track temperature, humidity, and air quality in barns, taking care of animals' optimum conditions.

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e) Telemedicine: Veterinary care without borders

- Just like human health care services were transformed by telemedicine during the COVID-19 pandemic, this virtual form of care is also changing how veterinarians interact with patients.
- **Video consultations**: Now, clients can book a video call with a veterinarian, making it smoother to seek expert opinions for minor issues, postoperative care, or second opinions.
- **Tele-triage services**: Dedicated health care apps offer veterinary support around the clock to guide owners on whether an urgent visit is needed or whether home care will suffice.
- **Health records mobile applications**: With a health-record-based mobile app, owners can digitally store and share vaccination records, medications, and medical histories, facilitating communication between veterinarians and clients.

f) DNA Mapping

The breeding process has also been revolutionized by technological innovation. Advancements made in DNA mapping and animal health diagnostic tools over the last few decades provide today's chicken breeders with access to an abundance of data regarding the health and genetics of the birds under their care. This data is instrumental in the breeding process.

- DNA tests to check for any genetic disorders down the line
- Blood oxygen level tests to ensure heart and lung health
- Ultrasounds to examine breast muscles.
- X-rays of joints. Leg and joint health are important traits to improve over each generation, as birds need strong legs and joints in order to easily access their feed and water and grow to their full potential.

g) Genomics and precision medicine: Custom fit treatment at genetic sequencing level. One more change on the horizon is genomics—the study of an animal's genetic code to optimize health care.

- **Breed-specific insights**: Testing patients with a DNA testing kit can reveal specific traits in the animal, such as habits and allergies.
- **Milestones:** More sophisticated treatments are using stem cell therapy, using the animal's own fat cells for enhanced efficacy.
- **Advanced genomic breeding for agricultural animals**: Genomics enables the selective breeding of more productive and resilient agricultural animals, resulting in decreased overall diseases and improved profits.

h) Drones and surgical robots:

- Drones equipped with high-resolution cameras and environmental sensors are transforming how animal farms are managed. Seen as a far-fetched dream not too long ago, robotics in animal health care is an everyday reality.
- They provide an aerial view of the farm, monitor animal behaviour, identify potential issues, and assess the health of the animals.
- They are used to spray insecticides to keep healthy environment tin the farm
- **Computer-assisted surgeries**: It enhances the skill of veterinary surgeons, and robotic arms are deployed during key-hole surgeries.
- **Robotic systems in agriculture**: Drones are used for monitoring and controlling bovine households. Milking, cleaning barns, and even sickness detection are now automated.
- Because of the enhanced capabilities of AI and machine learning, robotics is playing a larger role in the administration of care and facility maintenance. Robotics equipped with robust AI capabilities are working as surgical assistants and delivery and transportation aids.
- **Sound detection technologies** use microphones and sound analysis to monitor and identify audible signs of illness, such as coughs or respiratory changes.
- **Thermal imaging** uses heat sensors and cameras to monitor changes in temperature within groups of animals down to specific body parts such as hoofs and udders.
- **Smart ear tag devices**: can track the feeding, temperature, behaviour and movement of livestock and monitor vital signs for early indications of illness, heat detection and fertility – and transmit this information every 20 minutes, providing an accurate and up-to-date picture of each animal's health. This data then feeds into a system that alerts a farmer or veterinarian as soon as there is a change that could be an early sign of illness or a change in health status.
- **47% of poultry farmers** in Switzerland reported used smartphones to monitor chicken barns.
- In recent years, the landscape of molecular diagnostics in veterinary practice has been profoundly influenced by advancements in molecular biology and genetics
- **Gene analysis** is an emerging area that could allow practitioners to predict possible health challenges in an animal's lifetime through a Molecular genetic "risk profile."

I) Environmental DNA/RNA (eDNA/eRNA)

- Environmental DNA (eDNA) and environmental RNA (eRNA) are innovative techniques for detecting DNA and RNA in air, water, and soil samples. This non-invasive method captures nucleic acids released by organisms.This technique aids in disease diagnosis and monitoring in animals. Researchers have reported the use of eDNA and eRNA in biosecurity measures of animal farms.

k) Big data and predictive analytics: Powering proactive health

Animal health care generates vast amounts of data, from vet records to activity logs from wearables. Big data analytics transform this information into actionable insights.

- **Health trend analysis**: By studying data across thousands of animals, we can identify emerging health risks and regional disease patterns.
- **Personalized alerts**: Platforms like IDEXX use data to send customized wellness alerts to clients, nudging them about pet vaccinations, diet changes, or preventive screenings.
- **Farm management software:** Big data help farmers monitor herd performance, detect productivity issues early, and optimize resources like feed and medication.

l) Next-generation sequencing (NGS) technology:

- Next-Generation Sequencing (NGS) is a high-throughput DNA sequencing technology that rapidly sequences millions of DNA

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fragments simultaneously. It's based on the principle of fragmenting DNA, attaching adapters, amplifying these fragments, and then sequencing them in parallel. The core concept involves reading the sequence by identifying the fluorescently labeled nucleotides as they are added to the growing DNA strand.

- It is a valuable diagnostic tool used to sequence pathogens to understand their evolution and identification better. It has been successfully applied in disease diagnosis of human, animals and agriculture.

m). Biosensors

- Biosensors have emerged as essential tools in the field of molecular biology and bioanalytics, offering highly sensitive and specific methods for detecting and quantifying a wide range of biomolecules. These devices are valued for their ability to convert a biological response into a detectable signal, directly correlating with the concentration of the target molecule.
- Electrochemical biosensors coated with novel surface chemistry dramatically simplify development of portable diagnostics with potential to detect many disease biomarkers. Biosensors are rapidly gaining ground in animal health. These innovative devices can detect specific molecules associated with diseases, toxins, or environmental changes. They offer a fast and accurate means of diagnosing health issues in animals, enabling early intervention and precise treatment. (fig.1.)
- Biosensors address the critical problem of diagnosing infectious diseases in livestock, where the early and accurate detection of pathogens like *Brucella* and *Toxoplasma gondii* is essential for preventing significant reproductive health issues.

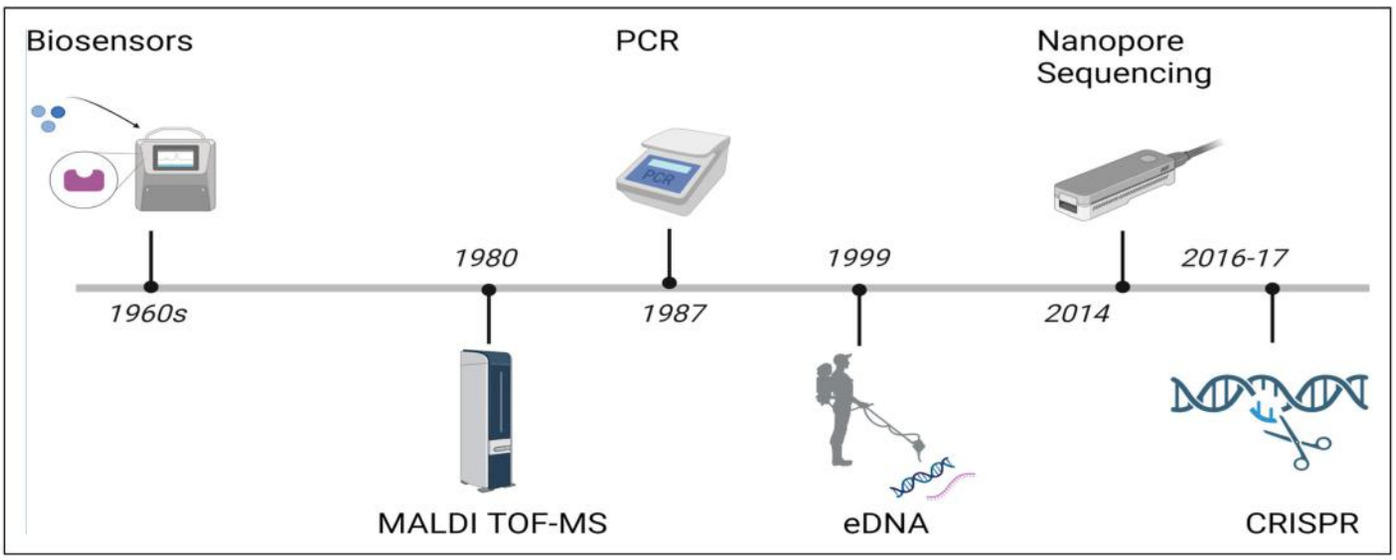

Fig. 1. A chronological overview of disease diagnostic tool development

n) CRISPR Technology

- Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) gene-editing technology can potentially transform how diseases are treated. It could help make significant advances against killer diseases like cancer.
- The CRISPR-Cas system, initially a genetic editing tool, is now being adapted for disease detection in animals. By designing CRISPR-based tests, farmers can rapidly identify diseases with high accuracy, providing an innovative approach to disease management in animal populations.
- CRISPR gene editing and next-generation sequencing (NGS) have transformed clinical and life sciences research. CRISPR permits the selective targeting and editing of specific nucleotide sequences, with a degree of accuracy and ease unachievable just a few years ago. NGS allows for high-throughput, precise and affordable DNA or RNA sequencing.

o) Smart bandages

A bandage that uses sensors to monitor wound healing

- has been developed by researchers in the US. It "promotes faster closure of wounds, increases new blood flow to injured tissue, and enhances skin recovery by significantly reducing scar formation", according to the Stanford University team behind it.
- A thin electronic layer on the bandage has temperature sensors that monitor a wound. If necessary, they can trigger more electrical stimulation to accelerate tissue closure.

p) Blockchain technology: Safeguarding animal health records

- Amid all the sensitive information being exchanged, blockchain technology offers a secure solution.
- **No alterations are possible**: Blockchain guarantees precision and accuracy in protecting an individual's health record, including the vaccination and treatment history.
- **Visibility into the supply chain**: In the case of animal husbandry and food production, blockchain monitors an animal's life cycle from birth through its life until it's sold, enhancing food safety and traceability.

The road ahead: A smarter, healthier future

The pace of digital disruption over the past few years has been spectacular, transforming every sector of the economy, including animal production, health and welfare. The fusion of these technologies is not happening in isolation—it's creating a synergistic ecosystem where AI analyzes IoT data, telemedicine uses big data insights, and genomics informs personalized care plans.

Imagine this scenario: A farmer receives a mobile alert from a smart collar indicating early symptoms of illness in a cow. An AI diagnostic platform analyzes the data, suggests preventive measures, and schedules a telemedicine consultation—all automatically, in real time. Blockchain secures the treatment record for future reference.

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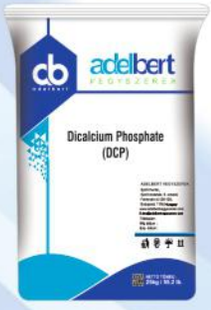

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The speed of both the development and application of digital technologies in animal health is increasing exponentially. While it took 150 years for dairy farming to shift from hand milking to mechanised milking, the last three decades alone have seen the introduction of milking robots, wearable sensors and heat detectors to identify the optimum window for cattle breeding.

New digital tools, services and insights are continually uncovering new potential to enhance the key pillars of defending and maintaining good animal health: prediction, prevention, monitoring, diagnosis and treatment. Modern data infrastructure and analytics is allowing knowledge to be aggregated globally and across animals in every region so that:

- Veterinarians facing a rare circumstance or illness can tap into insights gleaned from the experiences of others to better understand treatment options.
- Researchers seeking subtle signs of health changes can use machine learning to analyse endless animal profiles and diagnostics results to find the subtle 'signal in the noise' that enables new protocols for prevention.
- Retailers can lean upon digital traceability systems that allow them to see how animals are raised and their produce reaches store shelves, helping them inform consumers of the safety and sustainability of production.

Furthermore, digital technologies are allowing for a level of individualized care never before achieved in animal health.

- Digital technologies hold immense promise to strengthen prevention, productivity, One Health, and overall animal care. It begins with the three primary areas of innovation – predictive, monitoring and diagnostics technologies.
- **The digitalisation of diagnostics has provided more, better and earlier data** about the signs and symptoms of ill-health, contributing to a greater understanding about how health conditions develop in animals and how to predict, prevent and treat them.
- Digital monitoring provides a stronger defence against the spread of diseases within a group of animals, and between animals and people.
- From microphone systems that identify fluctuations in poultry vocalization to computerised patient records and activity trackers for pets that help owners care for their pets in new ways – technology has relieved the burden of observation and filled the communications gap between animal and human.
- **This data is increasingly being aggregated to build veterinary intelligence systems that can predict changes in an animal's health state before it even occurs,** allowing for preventative measures and custom health plans.
- Tools already exist that can amass and cross-reference animal health data and alert a farmer or veterinarian to an emerging issue based on signs in an animal's behaviour, biological markers or diagnostics results.

Conclusion

AI integration in animal health management offers transformative potential for the livestock industry. Digital transformation in animal health care is giving new meaning to animal wellness, surpassing simple treatment. AI, IoT, telemedicine, genomics, and blockchain are advancing care in a more intelligent, rapid, and compassionate manner. From disease classification to production forecasting, these technologies empower farmers and veterinarians to make informed, data-driven decisions. While AI serves as a powerful tool for improving efficiency and animal welfare, it should complement rather than replace human expertise. The future of animal health lies in the synergy between AI technologies and traditional veterinary practices, driving progress toward more sustainable and productive agricultural systems.

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Development of Flies and their control in Poultry Premises

Alok Kumar Singh[1#], Deepali Tiwari[2], Pradeep Kumar[3] and Nitin D. Hirani[4]

Flies create health problems for both human being and poultry. A poor management may lead to public health nuisance around poultry houses. Common primary flies encounter are housefly, black garbage fly and little house fly. These fly may cover large distance as house fly is reported to travel 25 miles, black garbage fly for 4 to 5 miles and little house fly for 1 to 2 miles. Majorly filth flies also carries pathogenic organism during travelling to new places i.e. salmonellosis, campylobacteriosis, listeriosis, E.coli etc. causing food borne infection to human and also diseases in poultry birds. However these flies usually remain close to their original breeding source but in search of better place for more favourable conditions may travel to a distance hence proper fly population is essential to avoid outbreak of disease in animal population.

Common flies associated with poultry manure and litter

House fly:

Musca domestica is major species associated with poultry manure. These breed in moist, decaying plant material spilled grain and feed in all kind of manure. These fly remain active in sunny weather and sit over filth, food products, people etc. Poor sanitation attracts flies for breeding and transmits various diseases like protozoal, viral, bacterial, rickettsial disease etc. where fly act as mechanical vector.

Morphology

- Fly adult measure about ¼ inch in length, dull grey in colour with sponging mouth part, have 4 black strips on thorax.
- Female lays egg on cracks and crevices under beddings where lay 2-7 batch of 100-150 eggs in 3-5 days interval.
- Egg is generally white, cylindrical, and maggots develop after 12-24 hours.
- Maggots undergo stage change to reddish brown puparium within 4-7 days and finally convert fly.
- Optimum temperature is required for stages conversion. Lifecycle increases with decrease in temperature. High light intensity during day time increase activity while decreases during night hours and ceases below 40°F.
- Flies generally found in ceiling, fans, walls inside and outside poultry house including vegetation. In these resting area "fly specks "which are light colour regurgitated and darker faecal spots.

Little house fly (Fannia canicularis)

- These fly look like house fly but smaller in size, adult measure around 3/16 inch in length and 3 brown strips found on thorax.
- Generally breed in less moist environmental which is normally preferred by house fly i.e. in poultry manure. These flies found near litter house floor, open ventilation also near human residency like branches, weed, side of building but causes less nuisance as settle less over food items.
- Flies prefer cooler climate so mainly population increase in early spring and decline in mid summer as temperature increase and decrease heat tolerance.
- Fly can be seen encircling light source in poultry house like hover. Aimless circling around hanging source is commonly seen.
- Eggs are laid on decaying material which converts to larvae in 36-48 hrs. Larvae are mainly brown, flatten spiny and convert to puparium within 8 days.
- Pupa converts to larvae within 8 days and lifecycle completes in 18 -22 days depending upon temperature.
- This fly mainly associate with spread of exotic new castle disease.

Dump fly (Black garbage fly)

- This fly have shiny bronze coat colour and have similar lifecycle as house fly i.e. about 14-45 days.
- These flies live only under favourable temperature. Egg batch out within 12-16 hrs and larvae stage resemble house fly minimum of 5 days, while pupal stage for 4 days and adult for 14- 20 days.
- Unlike housefly and little fly this fly generally found over food items at night also.
- Garbage fly larvae are predaceous in nature which feed other fly larvae controlling its population and itself grows its population.
- Many disease can be transmitted like salmonella, Ecoli, campylobacteriosis etc. through its body surface or digestive tract vomit over feeding surface.

Control of Fly:

To minimize losses in poultry farm it's is necessary to control breeding population of flies which can be achieved by integrated pest management programme involved following methods.

Monitoring of Population:

- This method is used to estimate number of flies disperse to area of human population which can possibly spread infection.
- Different method can be used to estimate size is "moving tape count "in which use same walk pattern in same time use sticky tape which can catch 25-75 flies per 1000 feet indicates the number.
- **Fly spot count:**
- It's another monitoring tool where card 3x5 inch is flush against feeding trough, ceiling, braces and other feeding area which is left for 1 week.
- At least 3 cards to be placed and it give idea of activity of flies within week but it does not indicate type of fly.
- If average 100 spots are found within 1 week, control measure it is very inexpensive and easy method for documentation.

Baited jug trap:

- This is expensive method in which jug is placed 3 feet above ground by hanging thread. It consist of plastic jug with 2 inch diameter hole access to flies.
- In this pheromone are places which attract flies and presence indicates need for control of flies population.

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- In poultry house hot spots containing poultry eggs and larvae to be identified and proper treatment with insecticide to be done to effective control fly population.

Cultural control:

- It is integration of manure, water management and sanitation which decreases fly breeding and break lifecycle continuity leading to population control.

Manure management:

- It acts as breeding ground for flies in which lay its egg. Moisture content is essential for survival of larvae.
- Moisture of material below 30 % is optimum and normally poultry manure contains 70-80 % moisture which is ideal for breeding flies.
- To overcome this problem dry manure is used which is made by reducing moisture content by spreading over floor in sunlight and avoid piling up.
- Management of dry manure is comparatively easy and can be used for several years.
- **Water management:**
- Water content is essential to provide suitable environment for breeding and avoid pipe leakage and proper graded floor should be made to avoid stagnation.
- Clean water should be available for birds and temperature should be maintained in hot weather.
- **Sanitation:**
- Quickly remove dead birds, broken eggs from litter and properly dispose away from poultry house by incineration or dumping deep on ground.
- Avoid stagnation of rainwater around poultry farm by proper drainage system as it provides breeding spot for flies.
- Restrict flies immigration from infected animal to healthy animal in farm.

Mechanical control:

- Fly traps are available in market which restricts entry of flies into eggs room.
- Electrical trap in which grid contain current supply is installed in gate and window of important room .some bait contain fly attractant material.
- Fan can be also used in egg room which provide resistance to entry of flies as it cannot move against strong wind. Sticky fly trap can be used when required.

Chemical control:

- Insecticidal control includes application of chemicals to kill fly either hampering their metabolic activity.
- It should be practiced along with sanitation to increase its efficiency of population control of flies.
- Different measures are larvicidal spray, adulticide spray and baits and surface treatment.
- Insecticide should be used wisely as it develops resistance and should be used alternately with different group of chemicals to prevent resistance development in insects.

Larvicidal spray:

- This is mix with manure to kill maggots found in manure. But it only provide short term benefit hence repeated application to be done but it can also add moisture to manure which provide beneficial environment for further larvae growth.
- Larvicidal spray have poor penetration power hence less number of larvae can be killed hence it is useful in small area having large number of maggots of flies.
- Over use should be avoided as it also kills useful insects of manure beneficial for fly.

Larvacide feeding trough:

- Larvicide utilises cyromazine (Larvadex) insect growth regulator.
- Mixed with poultry feed ration except for broiler breeder this larvicide work by killing immature stage of fly and cause little harm to manure or feed micro flora.
- This should not be given continuous if active maggots are not visible than discontinue till optimum level of flies.
- During winter check for fly population and limit its use for consecutive months within year. Manure from animal fed Larvadex can be using i.e. not more than 3 tons per acre per year. These are mainly used for spot treatment.

Adulticidal baits:

- Cheap and easy to use which kill flies which are escape other methods of control.
- Combine bait with other methods for effective control and place it over egg tray or cardboard panel to avoid fall into manure.

Adulticidal space spray:

- Contains pyrethrins, or combination of dichlorovs and synthetic pyretherin which kills adult flies enclosed in air space.
- These have minimum residual which decreases chances of resistance but should be used wisely.
- Do not spray over birds and use minimum over poultry house.

Biological control:

- It's contribute to overall control programme where natural predator use to kill insects.
- Such as macrochelid mites; Macrocheles muscaedomesticae, it is reddish brown 1/16 inch long it consumes 20 eggs per day and feed over eggs and first instar.
- Parasitic wasp which is about size of housefly and specifically attract to them to lay eggs over puparium where developing larvae of wasp consume puparium. But these are not enough since it laid egg less than flies. So producer should use artificially adapted wasp but other insecticide chemical should be used wisely to avoid killing of useful wasp.
- Integrated use of all measure ensures proper population control of fly and minimum harm to poultry houses.
- With all above measures and control strategies minimal loss due to flies can occur .proper monitoring of flies population in premises ensure control of nuisance.

Alok Kumar Singh[1#], Deepali Tiwari[2], Pradeep Kumar[3] and Nitin D. Hirani[4]

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Key sessions included insights by Poultry Expert Dr. Rais Rajpura (Ass. Prof., AAU, Anand) on "Gut health challenges: Role of natural gut health modulators (tannins) in poultry and Dr. Mojca Osredkar Mergole (Global Poultry Technical Manager, Silvateam, Italy) on Silvafeed Nutri P for poultry gut health and motility optimization; highlighting the major gut health benefits & powerful antimicrobial action of specialized functional tannins in poultry.

Participants appreciated the scientific depth, practical relevance & collaborative approach taken by Symbio Nutrients and Silvateam in addressing one of the most pressing concerns in modern poultry production. The seminar reinforced Symbio Nutrients’ commitment to delivering innovative, research-backed solutions for enhancing poultry gut health and productivity.

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Zeus Biotech made its presence in VIV Asia 2025, Bangkok

The 17th edition of VIV Asia, Asia's leading Livestock Expo, took place from 12th to 14th March 2025 at BITEC, Bangkok, Thailand. The event attracted over 51,000 visitors from 129 countries and hosted 1,500 exhibitors from 63 nations, providing a vital meeting point for global leaders in animal feed and nutrition.

VIV Asia is recognized as the largest and most comprehensive feed-to-food event in Asia, bringing together all sectors involved in animal protein production. This prominent multi-species event covers everything from feed production and animal farming to breeding, processing, veterinary services, and animal health, encompassing poultry, piggery, dairy, fishery, and pets.

Zeus Biotech Pvt. Ltd., a manufacturer of premium animal nutritional supplements, actively participated in VIV Asia 2025, showcasing its current range and recently launched products to key industry players in the animal nutrition sector. Zeus Biotech Limited enjoys a strong position of trust and reliability with customers in the South East Asia, Africa and the Middle East regions. Information about the company activities were disseminated and detailed explanation about its products and its mode of action were highlighted. Furthermore, VIV Asia 2025 served as an invaluable platform for us to connect with our valued associates from across Asia.

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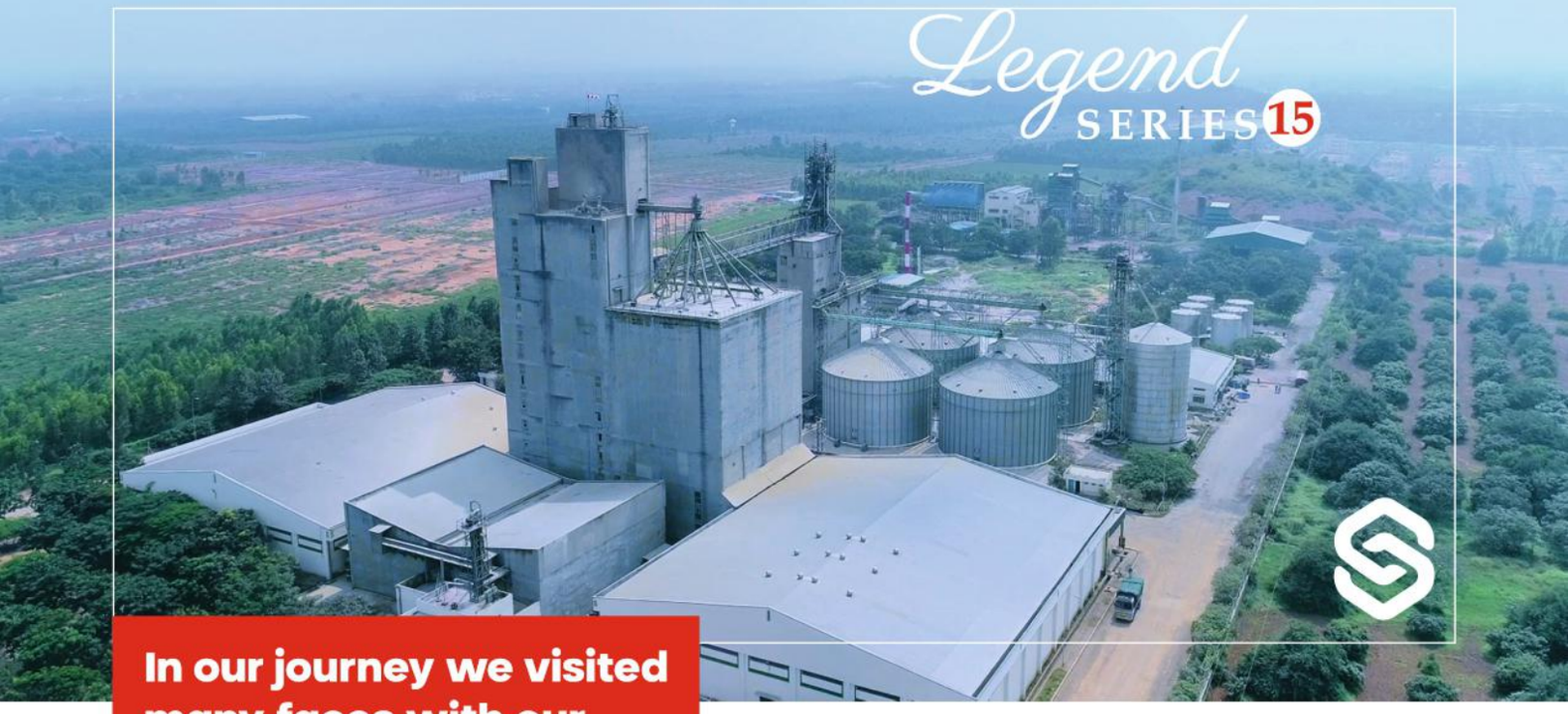

In our journey we visited many faces with our poultry industry legends, and one among them is

Mr. Soundararajan

Director of Suguna Foods Pvt. Ltd.

About Suguna

Suguna Foods Pvt. Ltd, India's leading poultry conglomerate, has grown significantly over a period of 40+ years. The company's core value is its dedication to economic and social development in rural India, and it has currently empowered over 40,000+ farmers from 15,000+ villages across 18 Indian states, rewriting the destiny of thousands of farmers and creating our future entrepreneurs. It mobilizes to be the 'protein leader' and bridges with adept business ideals that strive to build a healthier nation for consumers.

1. Are you originally from Coimbatore?

I am originally from a small village near Udumalpet. However, we eventually settled in Coimbatore as our business operations began from here and the city offered the right environment and infrastructure for growth.

2. What is the best thing you have experienced in your journey so far?

One of the most rewarding aspects of our journey has been pioneering the contract farming model in the poultry industry. This model has empowered thousands of farmers by ensuring consistent income and support. It aligns with our core value of contributing to the economic and social development of rural India. Through this model, we've not only uplifted rural communities but also contributed significantly to meeting the protein requirements of our country.

3. What has been your greatest motivation throughout your journey?

Starting from humble beginnings with no management background, our biggest motivation has been the ability to empower farmers and build a committed team that shares a common vision. Watching our efforts translate into livelihoods and a stronger rural economy has been deeply fulfilling.

4. Why did you choose the poultry and livestock industry?

Coming from an agricultural family, I was involved in farming from an early age. This background gave us deep insights into the challenges faced by farmers. We chose to continue in the agri-based sector with a mission to improve farmer welfare, boost their income, and explore new technologies to modernize and grow the industry sustainably.

5. Compared to other major players in the industry, what sets your organization apart?

What sets us apart is our early adoption and implementation of the contract farming model, which was revolutionary at the time. Our focus has always been on people—building strong teams, robust systems, and processes with a clear commitment to all stakeholders. We believe in creating long-term value through integrity and innovation.

6. Can you tell us about your family?

I have a small and contented family. I live with my wife and we are blessed with a son and a daughter. Their support has been a big part of my journey.

7. What is your vision for Suguna's position in the livestock industry?

We don't see ourselves as competing for the title of 'leader'; instead, we aim to be a responsible and impactful player in the industry. Our goal is to contribute meaningfully by ensuring access to nutritious protein for every Indian.

8. What is your dream for the next generation entering this business?

My dream for the next generation is to uphold the legacy, values, and stakeholder commitment we've built over the years. At the same time, they must embrace innovation, leverage emerging technologies, and continue to advance the industry sustainably.

9. What is your favorite food?

I prefer protein foods that support a healthy lifestyle. I naturally value protein-rich meals.

IO. What are your hobbies?

In my leisure time, I enjoy long drives and spending time in nature, particularly in wildlife settings. These moments allow me to relax and reconnect with the natural world.

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Consideration of Protein and Amino Acid Requirements for Poultry

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Department of Animal Nutrition, College of Veterinary Science and Animal husbandry, DUVASU, Mathura-281001
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Feed proteins are complex amino acid polymers which are broken down in the gut into amino acids. These amino acids are absorbed and assembled into body proteins which are used in the construction of body tissue e.g. muscles, nerves, skin and feathers. Dietary crude protein levels do not indicate the quality of the proteins in a feed, protein quality is based on the presence and balance of essential amino acids in the feed ingredients.

Dietary crude protein (CP) requirements are somewhat of a misnomer as the requirement is based on the amino acids content of the protein. Once digested and absorbed, amino acids are used as the building blocks of structural proteins (muscle, skin, and ligaments), metabolic proteins, enzymes, and precursors of several body components. Because body proteins are constantly being synthesized and degraded, an adequate amino acid supply is critical to support growth or egg production. In poultry, 22 amino acids are needed to form body protein, some of which can be synthesized by the bird (non-essential), whereas others can not be made at all or in sufficient quantities to meet metabolic needs (essential). Essential amino acids must be supplied by the diet, and a sufficient amount of non-essential amino acids must also be supplied to prevent the conversion of essential amino acids into non-essential amino acid.

Additionally, if the amino acids supplied are not in the proper, or ideal, ratio in relation to the needs of the animal, then amino acids in excess of the least limiting amino acid will be deaminated and likely used as a source of energy rather than towards body protein synthesis. This breakdown of amino acids will also result in higher nitrogenous excretions.

Ideal amino acid profile

It is important to supply the broiler with an appropriate balance of digestible amino acids. As an aid to achieving this objective, an Ideal Amino Acid Profile can be used. This is a system where the requirement of the main amino acids that may be limiting in broiler feeds are calculated and then lysine is used as the reference amino acid to which ratios are set for other amino acids.

The best way to reduce N in poultry excreta is to lower the amount of CP that is fed by supplementing diets with amino acids. Reductions in the non-essential amino acid pool, coupled with supplying a more "ideal" amino acid profile in the diet can substantially increase the efficacy of overall N retention by the bird. On a practical basis, however, bird performance can be hindered by these lower CP diets due to a number of factors that tend to be associated with dietary CP and amino acid reductions. Formulation based on bird amino acid requirements rather than CP can minimize N excretion by simply reducing total dietary N intake. Reducing the amount of CP and excess amino acids being fed is the most obvious method to curb N excretion and the amount of NH_3 that can be formed and volatilized.However, the extent to which N reduction can be accomplished is largely limited due to meeting the most limiting amino acid after threonine and through economic decisions on ingredient selection.

Unfortunately, there is a wide-spread belief that whenever CP concentrations are lowered, performance is negatively affected. Burnham (2005) speculates that lowered CP concentrations beyond practical formulation and then did not supplement back with sufficient amounts of limiting amino acids other than methionine (Met) and lysine (Lys). Reductions in the non-essential amino acid pool, coupled with supplying a more "ideal" amino acid profile in the diet can substantially increase the efficacy of overall N retention by the bird. On a practical basis, however, bird performance can be hindered by excessively lowering CP in diets due to a number of factors other than the reduction of CP itself. These factors can include: reduced potassium levels, altered ionic balance, lack of nonessential amino acids, imbalances among certain amino acids (e.g. branched chain amino acids), and/or potential toxic concentrations of certain amino acids.

Amino acids which are said to be essential cannot be synthesized by the bird. These essential amino acids must therefore be fed in order to supply the building blocks needed in the synthesis of body proteins thereby supporting growth. When supply of a single amino acid does not meet the bird's requirement, it is considered to be "limiting". At any given physiological stage of growth or age, a specific amino acid profile is needed to support optimal growth, with no limiting amino acids or surpluses. This profile has been termed an "ideal" ratio, or "ideal protein". Therefore, to minimize N excretion, the "ideal" combination of essential and non-essential amino acids are needed to meet growth and/or egg production by the bird. However, due to available feedstuffs and a limited number of supplemental amino acids it is difficult to provide this optimal ratio to the bird. For the past couple of decades, the broiler industry has utilized feeding strategies in phases that are shorter as to more closely meet the nutrient needs of the developing bird.

Ingredient selection

Selection of feedstuffs with relatively high digestibility can help with overall reductions in amino acid formulation. Sources such as feather meal are not typically considered due to their amino acid profile, and their digestibility. Similarly, formulation for emission reduction should also consider the protein quality as exemplified in the range of apparent digestibility where processing temperatures could cause Maillard reactions as well as other conditions that would reduce amino acid availability. Formulation on a digestible amino acid basis can a) reduce the total amount of CP fed, and b) limit the excessive amount of non-essential amino acids fed particularly if higher digestible CP feedstuffs are available.

Formulation on a digestible amino acid basis

Digestible amino acid values are considered by many to be the best measure of the amino acid value of ingredients. Long term reductions in CP formulation with adoption of the digestible amino acid concept should greatly reduce feed cost and N emissions. Further benefits of formulating on a digestible amino acid basis include decreasing safety margins, increasing the accuracy of predicting performance, and increasing the uniformity of product after processing. Unfortunately, knowledge of what the causes of variation in amino acid digestibility within and between ingredients is not sufficient. Additionally, inconsistent methodologies make it difficult to make the switch to using digestible amino acid values, especially for non-traditional feed ingredients.

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Determination of ingredient amino acid digestibility from feedstuffs has traditionally been done with either cecetomized roosters or collection of ileal digesta from birds fed only the test ingredient or a semi-purified diet with the feedstuff being analyzed as the sole source of protein and amino acids. These assays have an obvious down-side as they are expensive and have long turn-around times. Therefore, real time formulation on known amino acid digestibility for any feedstuff is unrealistic. Other approaches to improve the turn-around time include correlation of bird digestibility studies with near-infrared reflectance spectroscopy (NIR) or *in vitro* assays (Schasteen et al., 2007).Most of the grow out poultry studies focusing on use of digestible amino acid formulations have only focused on performance and economic considerations and not necessarily on N excretion or emission reduction (Dari et al., 2005). Formulation on a digestible basis can have large economic and environmental benefits, particularly when formulating with ingredients known to have lower digestibility.

Possible impact of crude protein reduction

Reducing CP content of broiler diets by less than 2% units resulted in decreased litter N content but no significant differences in NH_3 concentration in the house (Ferguson et al., 1998).The 13.3% decrease in N intake did correspond to 18.2% reduction in litter N content. Pope et al. (2004) also has looked at the advantages to increasing the number of phases during the broiler growth cycle. By changing diets every other day to more closely meet the bird's amino acids from 21 to 63 days of age, performance and meat yield did not change, but N excretion was reduced by 7 to 13%.

Conclusions

As a general guide, for each 1% reduction in dietary CP, estimated NH_3 losses are reduced by 10% in poultry. As animals are fed closer to true N requirements, further reductions in dietary CP may result in less pronounced reduction in N excretion and NH_3 losses. When poultry are fed closer to requirements and strategies are implemented to improve CP and amino acid digestibility, reductions in the amount of N excreted by the bird can be 10 to 20% depending on how much N is currently being fed. The poultry industry, however, currently utilizes substantial safety margins for formulation of N, due in large part to uncertainty of nutrient requirements and variability in ingredient amino acid content and digestibility. Reduction of N consumed, use of ingredients with complementary amino acid profiles, and use of ingredients with higher amino acid digestibility, therefore, can have dramatic impacts on the amount of N excreted.

Key Points

- Consider amino acid levels together with factors affecting feed intake (e.g. energy levels, feed intake control programs, feed form, feeder arrangement) when formulating broiler diets.
- Use high quality sources of protein, especially in circumstances when broilers are likely to suffer heat stress.
- Maintain updated ingredient amino acid and protein values on the formulation matrix.
- Balanced Protein approach produces benefits in broiler and economic performance.
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Dr. Dharmendra Boruah
B.V.Sc & A.H

In a strategic move to strengthen its presence in East India and Nepal, Numida BioCare Pvt. Ltd. proudly announces the appointment of

Dr. Dharmendra Boruah as Business Head - East & Nepal.

Dr. Boruah brings with him over 15 years of rich experience across the veterinary, agro-tech, and commercial sectors. A graduate in Veterinary Science from the College of Veterinary Science, Khanapara (AAU), he has consistently demonstrated excellence in operations management, strategic planning, and team leadership.

Before joining Numida BioCare Pvt. Ltd. Dr. Boruah served as Operations Manager at Advanced Bio Agro Tech Ltd., where he effectively implemented Lean methodologies to streamline business functions. His previous roles include Techno-Commercial Manager at Noble Vetscience LLP, where he spearheaded marketing strategies and mentored sales teams, and Manager Techno-Commercial at Godrej Agrovet, Managing Customer relationships and driving business growth. His journey also includes an impactful stint at Virbac Animal Health India Pvt. Ltd. as Business Officer, offering technical support across stakeholder groups.

Known for his result-driven mindset, strategic vision, and strong technical foundation, Dr. Boruah is well-positioned to lead Numida Bio Care's expansion in this vital region. His appointment reflects the company's commitment to delivering innovative solutions and personalized support to customers across Eastern India and Nepal.

This new leadership marks a significant milestone in Numida growth journey, reinforcing its mission to bring science-backed, sustainable solutions to the animal health and nutrition industry-international-quality medicines backed by strong technical support.

EVENT CALENDER

AUGUST 2025

22-23 AUG. 2025 – CLFMA 58th AGM & 66th NATIONAL SYMPOSIUM 2025

Venue : Hyderabad at Taj Deccan, Road No.1, Banjara Hills, Hyderabad – 500034, India
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Email : admin@clfma.org
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27-29 Aug 2025 –ILDEX Philippines

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SEPTEMBER 2025

17-19 SEP. 2025 - ILDEX INDONESIA

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SEPTEMBER 2025

16-18 SEP. 2025 SPACE

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

Dr. Wilmer Javier Pacheco is an Associate Professor and Extension Specialist in the Department of Poultry Science at Auburn University. Originally from Honduras, he earned a BS in Food Science before managing feed production at Murphy Brown, LLC in North Carolina. He later earned his MS and PhD in Poultry Science from North Carolina State University. His research focuses on feed processing, nutrition, and cost-effective strategies to enhance broiler performance and nutrient digestibility. Dr. Pacheco has authored over 30 research papers and 80 industry articles, delivered 165+ presentations across 16 countries, and mentored numerous graduate students and visiting scholars from around the world.

YOUR WEEKLY CHECK-IN NATIONAL EXPERT

DR. ALLAPPA SHIVAPPA DARUR

Dr. Allappa Shivappa Darur brings over 34 years of expertise in broiler breeding, hatchery management, and commercial layer operations. He served as the Pan-India Head of Breeding and Hatchery Operations at Godrej Tyson Foods, overseeing long- and short-term planning, infrastructure, and performance analytics. At Godrej Agrovet, he led breeder and hatchery operations in South India and managed forecasting and strategic planning. Earlier, he worked with Sri Krishnadevaraya Hatcheries and Bangalore Fort Farms, focusing on health, performance, and cost-effective feed formulation for commercial layers. He also managed operations at Poona Pearls and South West Pearls Hatcheries. A Cobb School alumnus (2010), he was honored with the IVPI Best Veterinarian award. Dr. Darur holds a BVSc & AH from Veterinary College, Bangalore (1988), and an MBA in HR from IGNOU (2000).

What SEC Members Have to Say

PRASENJIT RANDIVE

Sr Manager – Nutrition (BaramatiAgro limited)

Before joining, my goal was to improve poultry practices, increase productivity, and reduce losses. The course helped me a lot by covering important topics like brooding, nutrition, and biosecurity.I was able to improve feed conversion ratio (FCR), reduce bird losses, and manage records and maintenance more easily. These sessions on Broiler production and managementwill help in my professional workmore efficiently and cost-effectively.Overall, the training was very useful for my personal and professional growth. I gained practical skills, more confidence, and got to connect with others in the poultry field.Thank you again for this opportunity. I look forward to joining more programs in the future.

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2. Hatchery and brooding management
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5. Poultry nutrition
6. Biosecurity
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A Glimpse Behind the Innovation:
Customers Experience Excellence at DSAND Animal Nutrition

At DSAND, we believe in transparency, quality, and the power of collaboration. That's why, on 12th June, we were thrilled to open our doors to our valued customers i.e. Shri Ranpal Dhandha Ji, Shri Sanjeev Gupta Ji, Shri Ricky Thapar Ji & Shri Parveen Kumar Ji, offering them an exclusive look into the heart of our operations: our manufacturing unit, state-of-the-art laboratory, and pioneering Research & Development centre.

The visit was an immersive experience designed to showcase the meticulous processes, cutting-edge technology, and passionate expertise that go into every innovation we deliver as a product or service.

The Journey Begins: Precision in Manufacturing

The tour commenced at our analytical laboratory, a testament to our dedication to scientific rigor and product integrity. Here, customers were introduced to our team of expert chemists and scientists, who demonstrated the advanced testing protocols and analytical techniques employed to ensure the purity, performance, and safety of our products. From **Instrument section** to **Wet Chemistry section** to **Microbiology section**, visitors gained a deeper understanding of the meticulous validation process that underpins our quality assurance. This segment of the tour particularly resonated with those keen on understanding the scientific backbone of our offerings.

Unveiling the Science: Insights from Our Laboratory

Next, the journey continued to our bustling manufacturing unit, a hub of efficiency and precision. Customers witnessed firsthand our very first **Fully Automated Premix Unit** with **Batch Automation System**. They observed our skilled technicians and engineers leveraging advanced machinery and lean manufacturing principles to produce quality and consistency in our sustainable solutions.

Pioneering Tomorrow: The Heart of R&D

The highlight for many was undoubtedly the visit to our Research & Development center. This is where the future of sustainable solutions & technological advancements is being shaped. Our R&D team shared insights into their ongoing projects, showcasing how they are pushing the boundaries of innovation to develop next-generation solutions for Poultry Industry. It was an inspiring experience, demonstrating our commitment to continuous improvement and our vision for tomorrow.

Questions flowed freely, with our team enthusiastically explaining the intricate details of our production lines or our laboratory or R&D centre and our unwavering commitment to operational excellence. The feedback was overwhelmingly positive, with many expressing surprise and admiration for the scale and sophistication of our facilities.

Building Stronger Partnerships

Beyond the impressive facilities and advanced technology, the visit was a powerful opportunity to strengthen our relationships with our customers. It fostered a deeper understanding of our capabilities, our dedication to quality, and our collaborative spirit. We believe that by offering this level of transparency, we build trust and reinforce our position as a reliable and innovative partner.

At DSAND, we are proud of what we do, and we are even prouder to share our journey of innovation and excellence with those who matter most – our customers. We thank our valued customers who took out time out of their busy schedules to visit us. We look forward to welcoming more visitors in the future and continuing to build strong, lasting partnerships.

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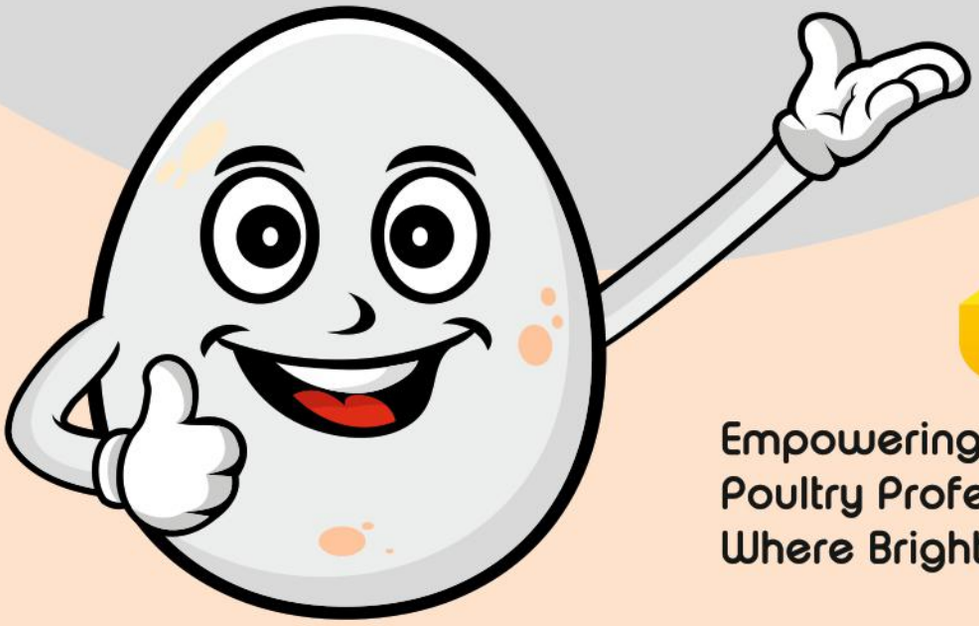

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Calsporin® as gut health solution in poultry Prevention is better than cure

By Pauline Rovers-Paap
Principal Relations Manager, Orffa Additives BV

Animal health and food safety are intrinsically linked to animals' intestinal conditions and the composition of the microbiota. Gut pathogens can harm the animal itself, and different bacterial species are also associated with food safety and zoonotic disease. Beneficial bacteria, added to the diet as probiotic, are used to reduce potentially harmful bacteria in the digestive tract and improve the microbial balance in the intestine.

Calsporin® is a probiotic with a long history, during which extensive experience and knowledge have been gained. The product contains viable spores of Bacillus subtilis C-3102 and is known for its wide application in multiple animal species and categories. This article summarizes the studies on this specific probiotic strain, focus*ing on its influences on different gut pathogens in poultry.*

Control of opportunistic pathogens in avian species

Numerous studies with Calsporin® in poultry diets resulted in a reduction or even exclusion of the most common pathogens, namely Clostridium perfringens, Enterococcus cecorum, Escherichia coli, and Salmonella species (Figure 1).

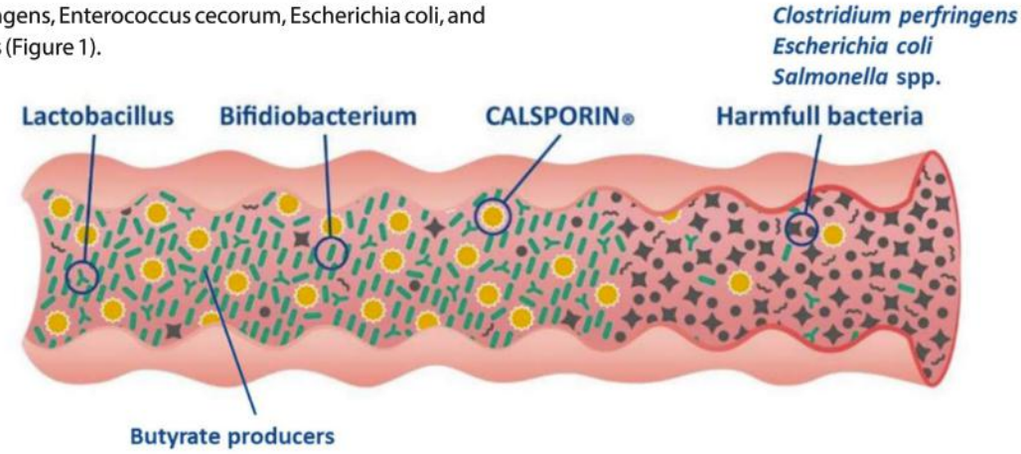

Figure 1: Probiotics support a more diverse microbiota with beneficial microbes

Salmonella is the most well-known enteric pathogen in poultry. It is primarily associated with contaminated eggs and meat products, which are a significant source of human Salmonella infections. S. Enteritidis and Typhimurium are serovars commonly reported in human salmonellosis cases. Enhancing the birds' intestinal microbial diversity through the addition of the probiotic Bacillus subtilis C-3102, could explain the observed reduction of Salmonella, and more specifically these harmful serovars, in the gut of layers and broilers.

Following coccidiosis infections, Clostridium spp. frequently caused complications resulting in Necrotic Enteritis (NE). The damaged intestinal wall of broilers provides an ideal environment for the development of virulent strains of C. perfringens, causing even more severe lesions characteristic of NE. In practical trials and experimental research using NE models, the addition of Bacillus subtilis C-3102 resulted in decreased levels of C. perfringens, reduction of lesion scores and improved gut integrity. This leads to faster recovery of the birds, higher growth performance, lower mortality rates and fewer treatments needed to stabilize gut health.

Enterococcus cecorum is one of the most common pathogenic bacteria in bacterial chondronecrosis with osteomyelitis (BCO), a costly disease which causes lameness in fast growing broilers. Maintaining gut health is crucial, as these bacteria can gradually permeate the intestinal epithelium, entering the bloodstream and triggering infections. In a university trial, the combination of yeast cell wall (MOS) and Bacillus subtilis C-3102 in broiler diets, delayed the onset of BCO and reduced its incidence by half.

Probiotics as insurance for gut health

In conclusion, it is crucial that the environment of the intestine is populated with a sufficient number of beneficial microbes and maintains good stability. Adding probiotics in the feed serves precisely this purpose, helping to stabilize the gut microbiota!

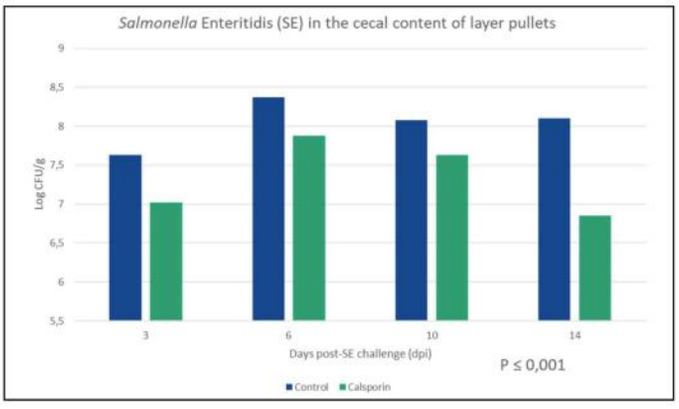

Figure 2: The dietary treatment including Calsporin® reduces Salmonella Enteritidis in poultry (adapted from Suganuma et al., 2021)

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Vets In Poultry (VIP) Hosts 2nd National Symposium:

The Poultry Summit – Innovate, Integrate & Thrive

Vets In Poultry (VIP), India's premier network of poultry veterinary professionals, successfully hosted its **2nd National Symposium** on **7th May 2025** at **Hyatt Regency, Chandigarh**. Centered around the theme "*The Poultry Summit: Innovate, Integrate & Thrive,*" the landmark event brought together over **580 stakeholders** including veterinarians, poultry professionals, farmers, poultry leaders, researchers, policymakers, media, associations, government officials, ministers and academic institutions for a transformative day of knowledge exchange, collaboration, and visionary dialogue.

Distinguished Guests

The symposium was honoured by the presence of several esteemed dignitaries:

- **Chief Guest**: *Shri Nitin Gadkari*, Hon'ble Union Minister, Ministry of Road Transport & Highways, Government of India (VC mode)
- **Special Guest**: *Shri Mahipal Dhanda*, Hon'ble Cabinet Minister, Government of Haryana
- **Guest of Honour**: *Smt. Alka Upadhaya, IAS*, Secretary, Department of Animal Husbandry and Dairying (DAHD), Government of India (VC mode)
- **Keynote Speaker**: *Mr. Balram Singh Yadav*, Managing Director, Godrej Agrovet Ltd

Joining them were the VIP Office Bearers **President** Dr. Ajay Deshpande, **Vice President** Dr. C.B. Pathak, **Secretary** Dr. Santosh Ire, **Advisor** Prof. Dr. Ajit Ranade, **Treasurer** Dr. Jeevan Sonawane, and **North Zone Head** Dr. Vishal Singh Rawat.

Inaugural Highlights

Following the unveiling of the symposium souvenir, **Dr. Vishal Rawat** extended a warm welcome to the guests and participants. **Dr. Santosh Ire** presented the inspiring journey of VIP from its humble beginnings in 2014 as a WhatsApp group of 50 veterinarians to a national platform of over 1,500 members. **Dr. Ajay Deshpande** delivered an insightful address on the critical challenges facing the poultry sector and the pivotal role of VIP in navigating these.

Mr. Balram Singh Yadav, in his keynote, emphasized the importance of unified action within the poultry ecosystem and shared insights into global market trends **Smt. Alka Upadhaya, IAS** highlighted the government's inclusive, supportive approach and reiterated DAHD's commitment to addressing sectoral needs **Hon'ble Shri Mahipal Dhanda** called for unifying poultry associations under one platform and underscored the importance of exports.

Hon'ble Shri Nitin Gadkari captivated the audience with a visionary address covering maize supply, infrastructure development, veterinary services, VIP association important role, doubling farmers' income, and green energy, underscoring the critical role of poultry in India's GDP.

The inaugural session concluded with remarks from **Prof. (Dr.) A.S. Ranade**, Technical Advisor, VIP.

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Technical & Expert Sessions

The symposium featured insightful sessions by industry stalwarts:

- **Unlocking Poultry Potential through Genetics** – *Dr. G.L. Jain*
- **Navigating Disease Challenges** – *Dr. K. Jayaraman*
- **Tech for Health: Revolutionizing Poultry Business** – *Mr. Suresh Rayudu Chitturi*
- **Empowering the Poultry Sector: Vision 2047** – *Dr. S.K. Dutta*
- **Mitigating Climate Change: A Comprehensive Approach** – *Prof. Dr. N.K. Mahajan*

Expert Panel Discussion

A high-impact panel discussion, moderated by **Prof. (Dr.) P.K. Shukla**, President, Indian Poultry Science Association, explored opportunities for innovation, integration, and resilience in the poultry ecosystem. Esteemed panelists included **Mr. K.G. Anand**, **Dr. Kamna Barkataki**, **Mr. Valsan Parameswaran**, **Dr. Ajay Deshpande**, **Mr. Nasir Hussain**, and **Dr. S.K. Dutta**.

Acknowledgments & Closing

VIP honored its committee members, sponsors, associations, and media partners with mementos in recognition of their support and contributions.

Dr. Ajay Deshpande, President, VIP, reflected: *"This symposium was not merely an event—it was a shared commitment to shaping a stronger, more innovative Indian poultry sector. We thank every participant and partner for their invaluable contributions."*

About Vets In Poultry (VIP)

Vets In Poultry (VIP) is a national association of over 1,500+ veterinarians working across the Indian poultry sector. Our members represent every aspect of the poultry value chain, including broiler and layer farming, breeding, animal health, research, academia, and pharmaceuticals etc. VIP is committed to fostering knowledge, collaboration, and solutions to advance poultry science and production in India.

Gratitude

Team VIP extends heartfelt thanks to all supporters, associations, government delegates, sponsors, speakers, panelists, moderators, and media partners who made *The Poultry Summit 2025* a grand success.

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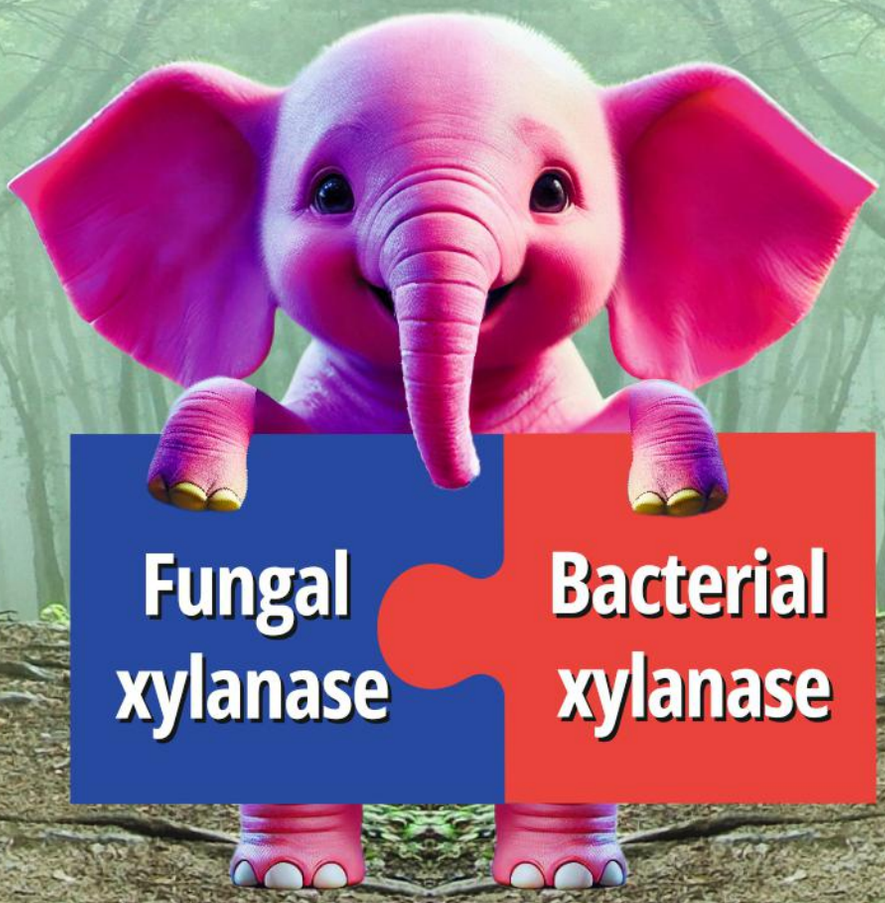

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Layer Concentrates:
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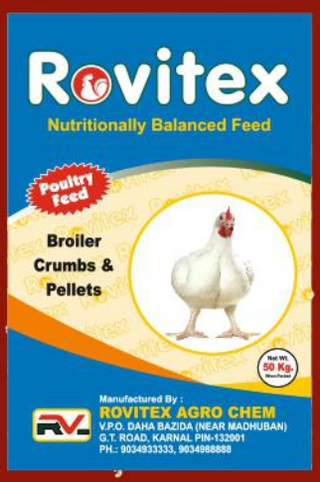
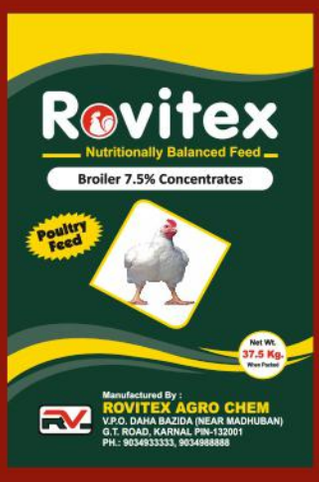
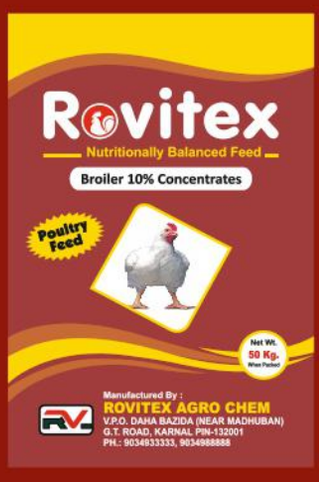
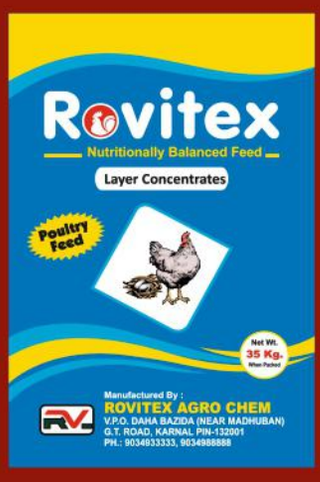
- Layer 25% Concentrates
- Layer 35% Concentrates

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









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HUVEPHARMA®

Sustaining Efficacy in Coccidiosis Control

Dr. Priyanka Kamble, Sr. Marketing Manager, Huvepharma SEA

Coccidiosis remains one of the most economically damaging diseases in poultry farming, globally affecting bird health, growth rates, feed conversion, and ultimately, profitability. Caused by protozoan parasites of the *Eimeria* genus, this disease targets the Gut Health and is nearly impossible to eradicate completely. The key to effective management lies in **long-term control**, with the primary goal being to maintain **low coccidial pressure** throughout the production cycle.

At **Huvepharma**, we emphasize the importance of **rotating coccidiostats** as a cornerstone strategy in the battle against coccidiosis. The practice of rotation is not just about maintaining performance; it's about **preserving efficacy** and **delaying resistance development**—especially in an era where no new coccidiostat molecules are expected in the near future.

Understanding the Need for Rotation

Coccidiostats have been used in commercial poultry production for decades. While they are indispensable tools, their **overuse or misuse can lead to resistance**. *Eimeria* parasites can adapt to the same anticoccidial product if it's used repeatedly without rotation, rendering it less effective over time.

By **alternating between ionophores and synthetic molecules** or using different combinations strategically across and within production cycles, producers can reduce the selective pressure on parasites and preserve product efficacy.

Field Evidence: Resistance Is real

A compelling example comes from a large **European poultry integrator** that used the same combination product (nicarbazin/narasin) for **over four consecutive years**. Although the inophore used post-combination was rotated between narasin, salinomycin, and monensin three times a year, the producers **did not see the need to switch to a newer combination** like **Monicox®** (nicarbazin/monensin), as field performance appeared acceptable.

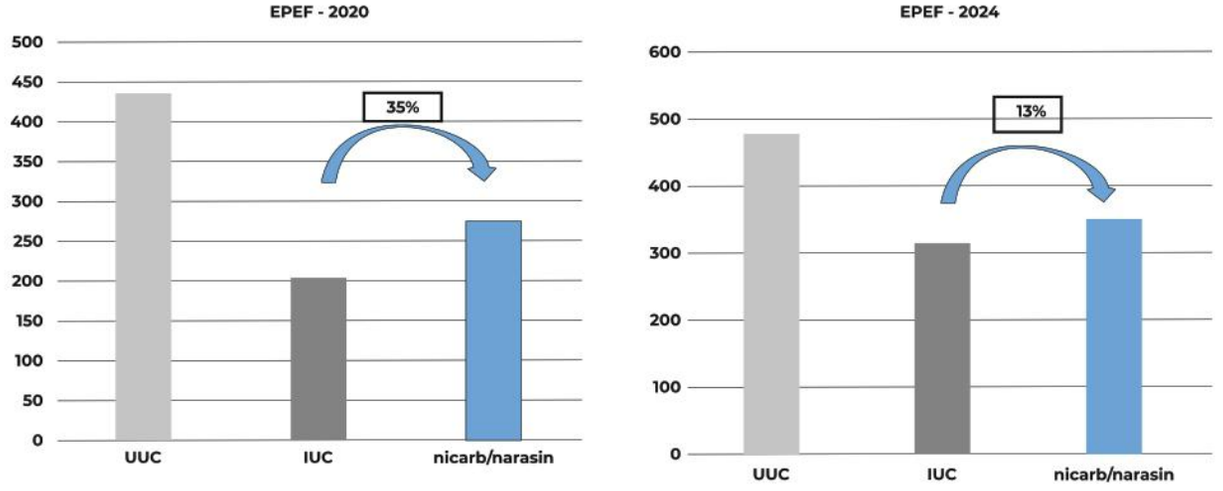

Figure 1. AST performance results from samples taken in 2020 (left) and 2024 (right)

To evaluate this practice, **Huvepharma conducted field sampling and anticoccidial sensitivity trials (AST) in 2020 and again in 2024**. In 2020, the performance improvement of the existing combination product versus an infected, untreated control (IUC) was **35%**, indicating good efficacy.

Monicox®

monensin + nicarbazin

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However, by 2024, the same product only showed a **13% improvement**, a level considered to provide **minimal benefit**. In just four years, the **efficacy had dropped by more than half**.

A second example of the benefit of rotation comes from field data generated by another European poultry producer. Prior to the trial there were not many rotations. In the summer of 2022, the producer decided to do a chemical break with Stenorol. Figure 2 shows the evolution of the European production efficiency factor (EPEF) before, during and after the chemical break. Before the break, the nicarbazin/narasin combination product was used in the starter diet. After the break, Monicox® (nicarbazin/monensin) was used in the starter diet. The graph clearly shows the benefit this chemical break brought to the company. For the first time they were able to reach an EPEF of more than 400.

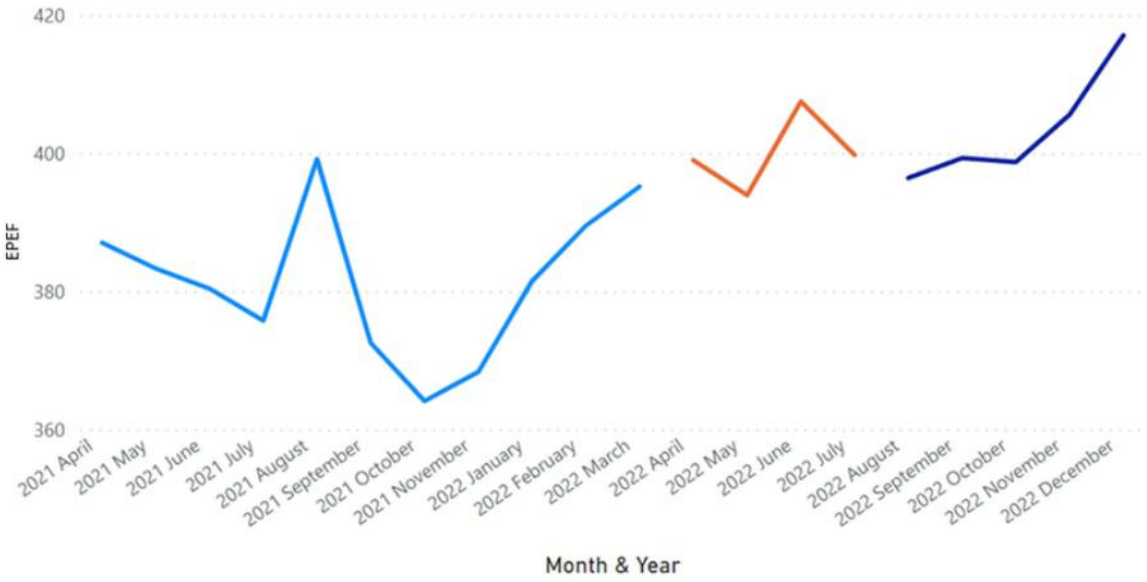


Figure 2. Evolution of the European production efficiency factor (EPEF) from early 2021 to the end of 2022.

Figures 3 and 4 show the improvement in EPEF was mainly driven by a lower feed conversion rate (FCR), although the growth was positively influenced by the chemical break and rotation to **Monicox®**

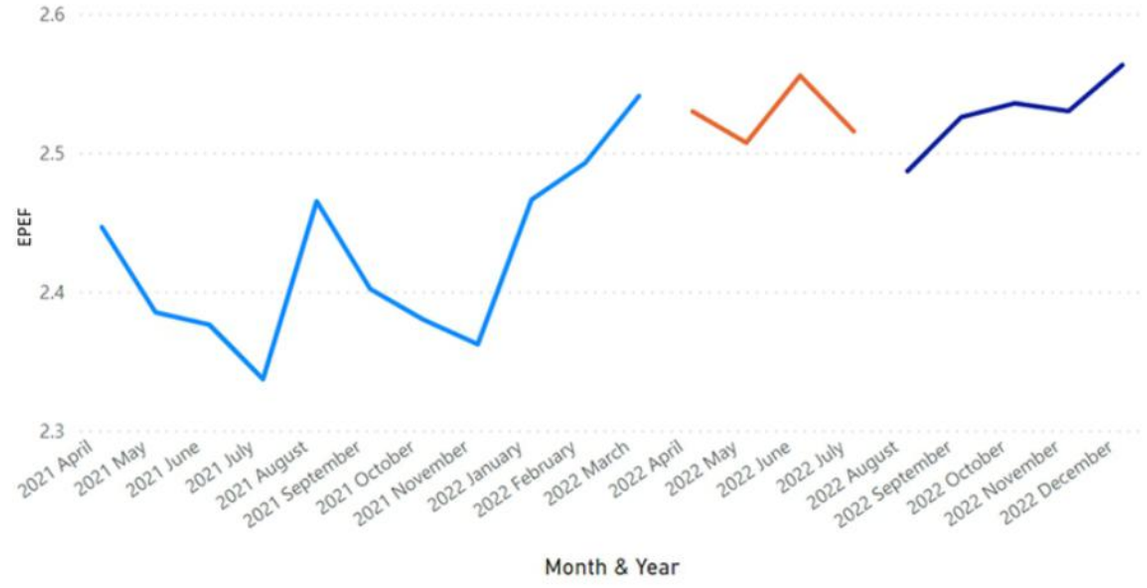
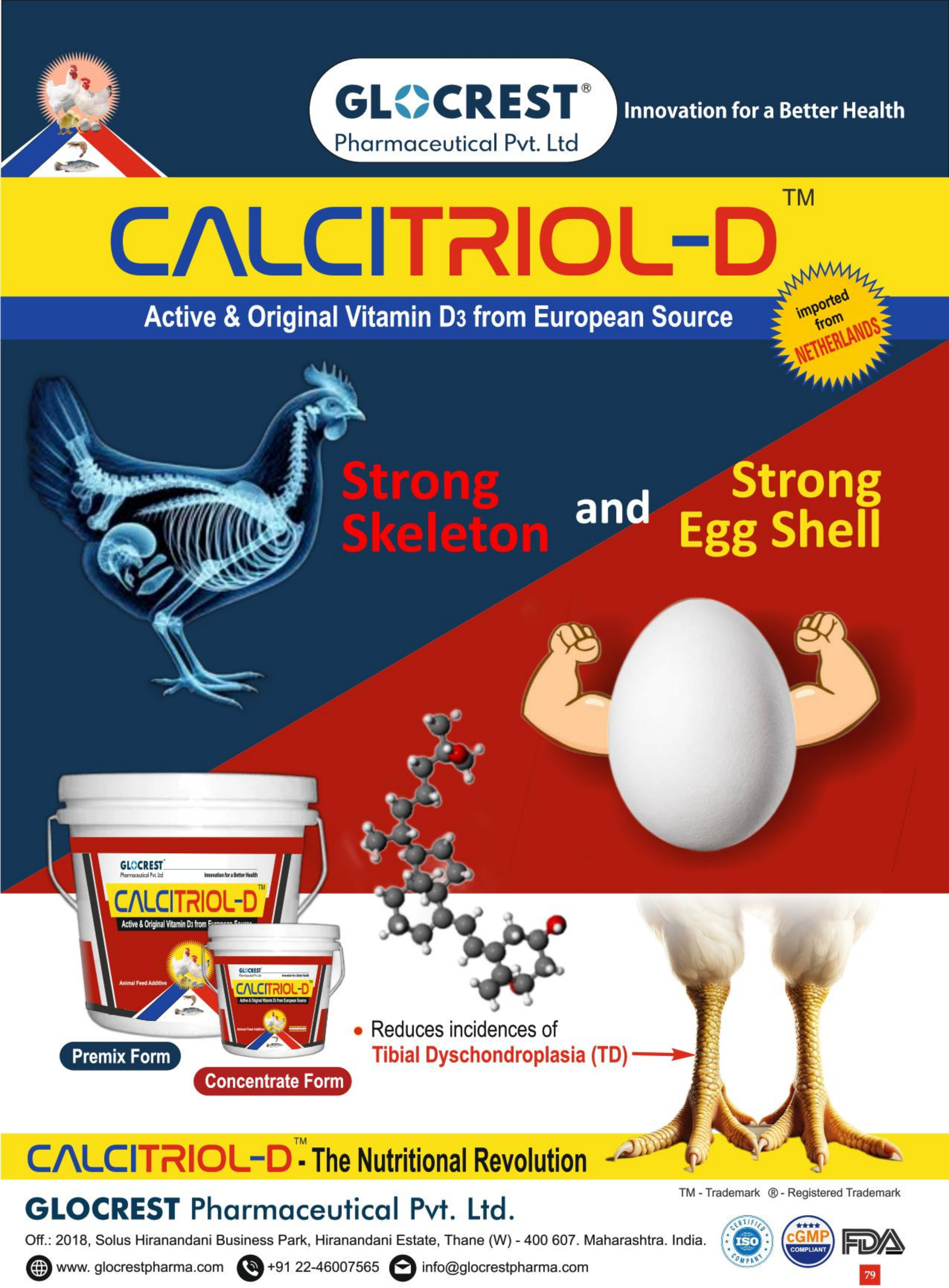


Figure 3. Evolution of adjusted weight from early 2021 to the end of 2022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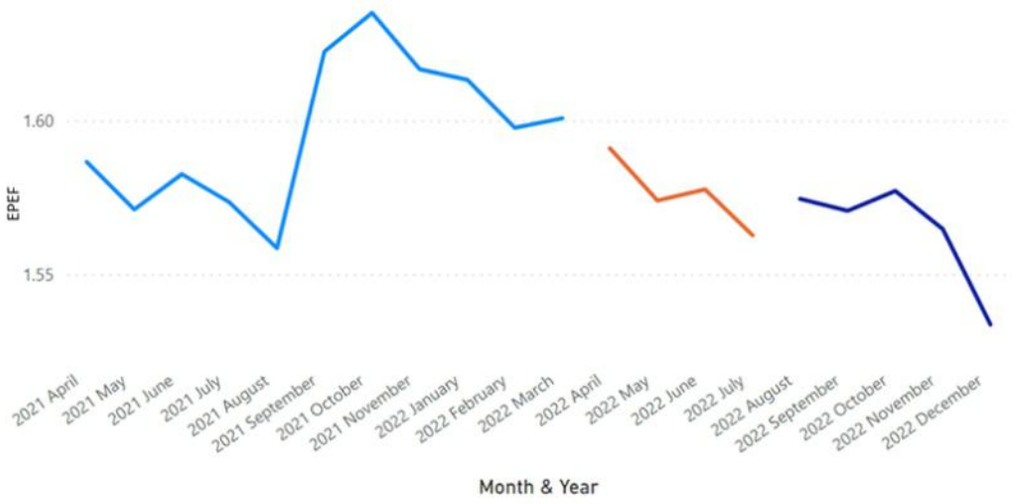

Figure 4. Evolution of adjusted FCR from early 2021 to the end of 2022

Following this clear evidence of reduced sensitivity, the integrator **revised their anticoccidial strategy**, adopting **Monicox®** and implementing a **rotation with another effective combination product**, resulting in significant field performance improvements.

The Iceberg Effect: What You Don't See Can Hurt Performance

Even when problems in the field are not obvious, **failure to rotate coccidiostats inevitably impacts performance**. This is why the **visual of an iceberg** is often used when discussing coccidiosis—the visible symptoms are only a fraction of the problem. Much of the **damage occurs subclinically,** hidden beneath the surface and often unnoticed by producers.

This makes timely and science-based decisions all the more challenging. But the principle is simple: **overusing any single product will reduce its effectiveness** over time. This principle applies not only to anticoccidials, but to **all disease control tools** across veterinary medicine.

All data shown in this article was gathered using Aviapp®, the poultry performance platform from Huvepharma that enables precision monitoring and evidence-based decision-making in commercial production environments.

Huvepharma's Science-Driven Approch

We advocate for **structured anticoccidial programs** that involve:

- **Shuttle Programs:** Using different products in the starter and grower phases within a single cycle.
- **Full Rotation Programs:** Changing molecules or combination products across successive cycles.
- **Resistance Monitoring:** Regular AST and field surveillance to guide decision-making.
- **Integrated Solutions:** Combining coccidiostats with good management, biosecurity, and vaccination where appropriate.

Conclusion

The case of the European integrator illustrates a broader truth: **perceived short-term stability can mask underlying resistance development**. Coccidiosis control is a long game, and **rotation is not optional—it's essential**. With no new molecules in the pipeline, the poultry industry must act responsibly to safeguard the tools we have. At Huvepharma, we provide producers with **scientific, field-proven solutions** to manage coccidiosis more effectively—ensuring healthier flocks and sustainable performance.

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"How to improve the physical quality of broiler feed?"

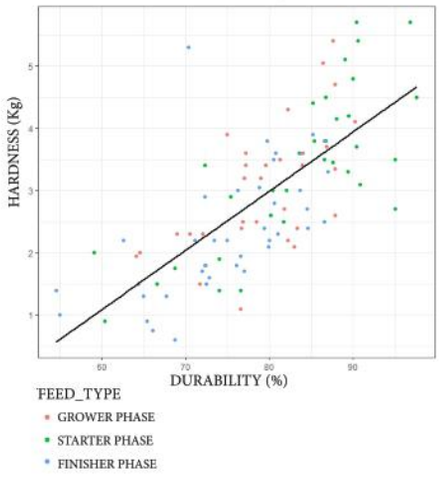
Broilers, which are granivorous birds, are quite susceptible to the sensory characteristics of feed. The physical presentation, and more precisely, the particle size can have an impact on their feeding behaviour. For example, the switch from a crumbled to a pelleted feed can be a critical period for these animals. Therefore, a good command of the presentation and physical quality of the feed is necessary for adequate chicken growth performance.

The physical quality of the feed can be influenced by many factors (formula, grind size, feed processing, etc.) and it is often evaluated using two different measures: pellet hardness and pellet durability. For example, the Techna quality recommendation for broiler pellets ranges from 75 to 80% for durability and less than 2.5kg* for hardness. On the one hand, a pellet that is too hard can result in feed sorting and wastage. On the other hand, a low durability with a high percentage of fines can lead to digestive problems and litter degradation. Thus, a poor feed presentation may induce economic loss by declining broilers' growth rate.

In June 2020, Techna conducted a study through eleven French feed mills to better understand the relationship between the manufacturing process and the physical quality of broiler feed.

In this study, regardless of the type of feed analysed, a positive linear relationship between pellet hardness and durability was observed. As the hardness increases by one point, the durability increases by 9.5 points.

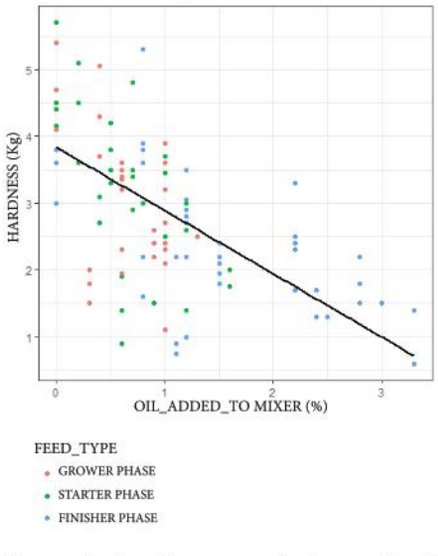
Relationship between pellet hardness and durability



These results demonstrate that in the starter diet, a high pellet durability before crumbling reduces the fine fraction of the final crumble. In addition, a coarse grind (> 3.15mm) in the finisher diet seems to negatively affect the quality of the pellet by reducing its durability and its hardness. This fact can be explained by an increase of cracking points when particle size is high, decreasing the cohesion between these particles and eventually degrading the pellet.

In contrast, when the particles are small, a higher overall surface is available, and therefore a better agglomeration and stability of the pellet. The data also illustrates that pellet durability and pellet hardness are negatively impacted by the oil content of the formula, mainly when this oil is added during the mixing process.

Effect of the oil content in mixer on pellet hardness



In conclusion, the coarse grind, as well as the oil, seem to have a major impact on chicken feed quality. It's also important to remember to monitor intermediate products (such as pellets before crumbling), which can be a key factor in the good management of the physical quality of broiler diets.

***Techna laboratory values (SABE durabilimeter, KAHL semi-automatic hardness tester)**

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AB Vista to host fiber symposium at 2025 Poultry Science Annual Meeting

Dr Caitlin Evans,
Technical Support Services Manager,
AB Vista

Dr Carrie Walk,
Head of R&D,
AB Vista

Dr Tara York,
Technical Director, NAM,
AB Vista

A NEW FOCUS ON FIBER IN POULTRY: IS IT NUTRIENT OR ANTINUTRIENT ?

16TH JULY 2025
PSA ANNUAL MEETING 2025
RALEIGH, NORTH CAROLINA

AB Vista will bring together industry experts to explore the evolving role of fiber in monogastric nutrition and exchange knowledge, in a fiber symposium at the Poultry Science Association (PSA) Annual Meeting 2025, which takes place in Raleigh, North Carolina, from July 14–17. The company will host *A new focus on fiber in poultry: Is it a nutrient or antinutrient?* on 16 July from 1:15 to 5:30 pm EST.

The symposium will explore how a deeper understanding of fiber's role in gut health, nutrient absorption, and animal performance is reshaping feed formulation strategies in poultry production.

By translating swine nutrition learnings into practical strategies for poultry, and uncovering gut microbiome dynamics, attendees will gain valuable insights into ingredient evaluation and diet optimisation. The symposium also offers an opportunity to connect with researchers driving innovation in monogastric nutrition.

Industry academics and AB Vista experts will deliver the following presentations at the symposium with the moderation of Dr Tara York, NAM Technical Director.

- Dr Caitlin Evans, Technical Support Services Manager at AB Vista, '*Maximising the benefits of fiber in poultry nutrition: insights and ingredient evaluation*': Evaluating functional fiber sources and their measurable impact on poultry performance.
- Dr Amy Petry, Assistant Professor of Monogastric Nutrition at University of Missouri, '*From pigs to poultry: the evolution of fiber in monogastric nutrition*': Providing a comparative overview of fiber's journey in monogastric research and its growing relevance in poultry.
- Dr Tim Johnson, Professor, Department of Veterinary and Biomedical Sciences at University of Minnesota, '*Fiber and the microbiome: what's all the hype?*': An exploration of how fiber shapes the poultry gut microbiome and its implications for health and efficiency.
- Dr Michael Kogut, Lead Scientist, Research Microbiologist at USDA, '*Intestinal integrity and key biomarkers for performance*': Unveiling the biological indicators that link fiber intake to enhanced gut function and bird resilience.
- Dr Carrie Walk, Head of R&D at AB Vista, '*Fiber and performance: connecting the dots for optimal results*': Presenting a synthesis of the research, linking dietary fiber strategies to practical performance outcomes.

"This symposium reflects AB Vista's commitment to driving forward practical innovation in fiber nutrition," said York. "By sharing the latest science and fostering open discussion, we aim to support the industry in making more informed, performance-driven decisions."

AB Vista is pleased to continue its long-standing support of the PSA Annual Meeting and looks forward to connecting with nutritionists, researchers, and industry partners at both the event and its symposium.

Journalists and editors are welcome to attend the symposium and schedule one-on-one interviews with AB Vista's speakers.

To arrange media interviews please contact mailto: pippa.moraitopoulos@garnettkeeler.com. Or for more information, visit AB Vista's website: https://www.abvista.com/contactus.

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The Hidden Dangers of Poultry Feather Pollution: A Silent Threat to Farm Biosecurity, Disease Transmission and Human Health

Poultry farming is a vital industry that provides food protein and economic benefits worldwide. However, it also presents environmental and health challenges, particularly concerning air pollution caused by poultry feathers and dust. Feather particles can become airborne, leading to respiratory issues, eye infections in humans, and disease transmission among poultry farms. This article explores the impact of poultry feather pollution on human health and poultry populations, highlighting preventive measures to mitigate risks.

Dr. Sandeep Gupta
Founder, LSDA Poultry Research Centre, Indore.
email: info@lsda.co.in

Air Pollution from Poultry Feathers

Poultry farms generate significant amounts of organic waste, including feathers, dander, and dust. These particles can become suspended in the air, contributing to air pollution. The primary sources of airborne feather particles include:

- **Feather Shedding:** Birds naturally shed feathers, which break down into fine particles.
- **Processing Facilities:** Slaughterhouses and poultry processing units release feather dust into the environment.
- **Ventilation Systems:** Poorly maintained ventilation in poultry farms can circulate feather dust, exacerbating air pollution.
- Dry Manure Handling:** Poultry droppings mixed with feather debris can contribute to airborne contaminants.

Feather dust contains biological contaminants such as bacteria, fungi, and viruses, which can pose health risks to farm workers and nearby residents.

Eye Infections in Humans Due to Poultry Feather Dust

Exposure to poultry feather dust can lead to eye infections, particularly in individuals working in poultry farms or processing units. The primary causes of eye infections include:

- **Bacterial Contamination:** Feather dust may carry bacteria such as *Salmonella* and *E. coli*, which can cause conjunctivitis and other eye irritations.
- **Fungal Spores:** *Cryptococcus* and *Histoplasma* fungi, often found in bird droppings and feathers, can lead to severe eye infections.
- **Ammonia Exposure:** Poultry farms generate ammonia from bird waste, which can irritate the eyes and exacerbate infections.
- Feather Microfibers:** Keratin-based feather particles can cause mechanical irritation, resulting in inflammation and redness.

Symptoms of poultry-related eye infections include redness, itching, excessive tearing, and sensitivity to light. In severe cases, untreated infections may lead to vision impairment.

Disease Transmission Among Poultry Farms

Feather particles can act as carriers of infectious diseases, spreading pathogens from one farm to another. The primary modes of disease transmission include:

- **Airborne Spread:** Feather dust can carry viruses such as Marek's Disease Virus (MDV), *Avian Influenza* and *Newcastle Disease*, infecting birds in neighboring farms.
- **Cross-Contamination:** Workers and equipment moving between farms can transfer contaminated feather particles, leading to outbreaks.
- **Parasites and Bacteria:** Feather mites and lice can spread bacterial infections such as *Psittacosis* and *Salmonellosis* among poultry populations.
- Wind-Carried Contamination:** Feather particles, carried by wind, can travel long distances and infect poultry populations miles away.

Once airborne, feather particles can travel significant distances, making disease control challenging for poultry farmers.

Preventive Measures

To reduce the risks associated with poultry feather pollution, farms can implement the following strategies:

1. **Proper Disposal of Feathers**: Ensuring that feathers are properly disposed of and not released into the environment can help reduce air pollution. This can be achieved through methods such as composting, incineration, or using feathers for industrial purposes.
2. Regular Facility Cleaning:** Frequent cleaning of poultry houses and equipment minimizes feather accumulation.
3. **Air Filtration Systems**: Installing air filtration systems in poultry processing plants and farms can help capture airborne feathers and reduce their impact on air quality.
4. **Protective Equipment**: Workers in poultry processing plants should be provided with protective equipment such as masks and goggles to reduce their exposure to airborne feathers and prevent eye infections.
5. **Biosecurity Measures**: Implementing strict biosecurity measures on poultry farms can help prevent the spread of diseases. This includes regular health checks for birds, vaccination programs, and controlling the movement of birds and equipment between farms.

Government regulations and industry best practices must reinforce these measures to ensure the sustainability and health of poultry farming operations.

Conclusion

Poultry feather pollution poses significant risks to human health and poultry biosecurity. Airborne feather particles can cause respiratory issues, eye infections, and facilitate disease transmission between farms. Implementing comprehensive preventive measures—including improved ventilation, waste management, and biosecurity protocols—can safeguard farm workers, poultry populations, and nearby communities. As research progresses, policymakers and farm owners must collaborate to develop solutions that address the environmental and health impacts of poultry feather pollution.

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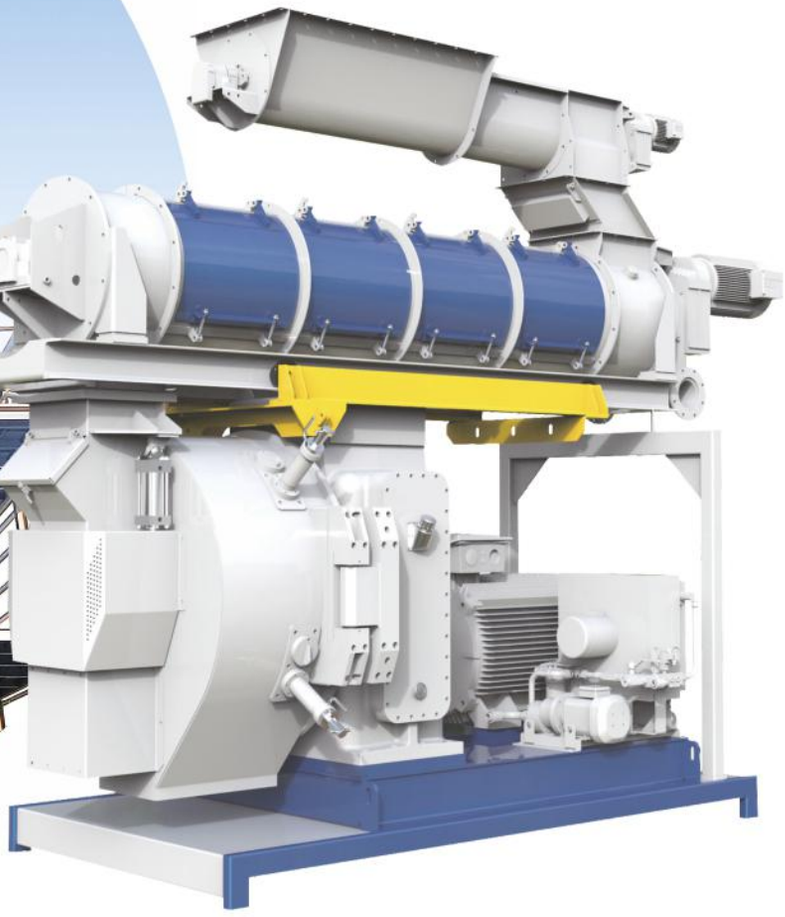

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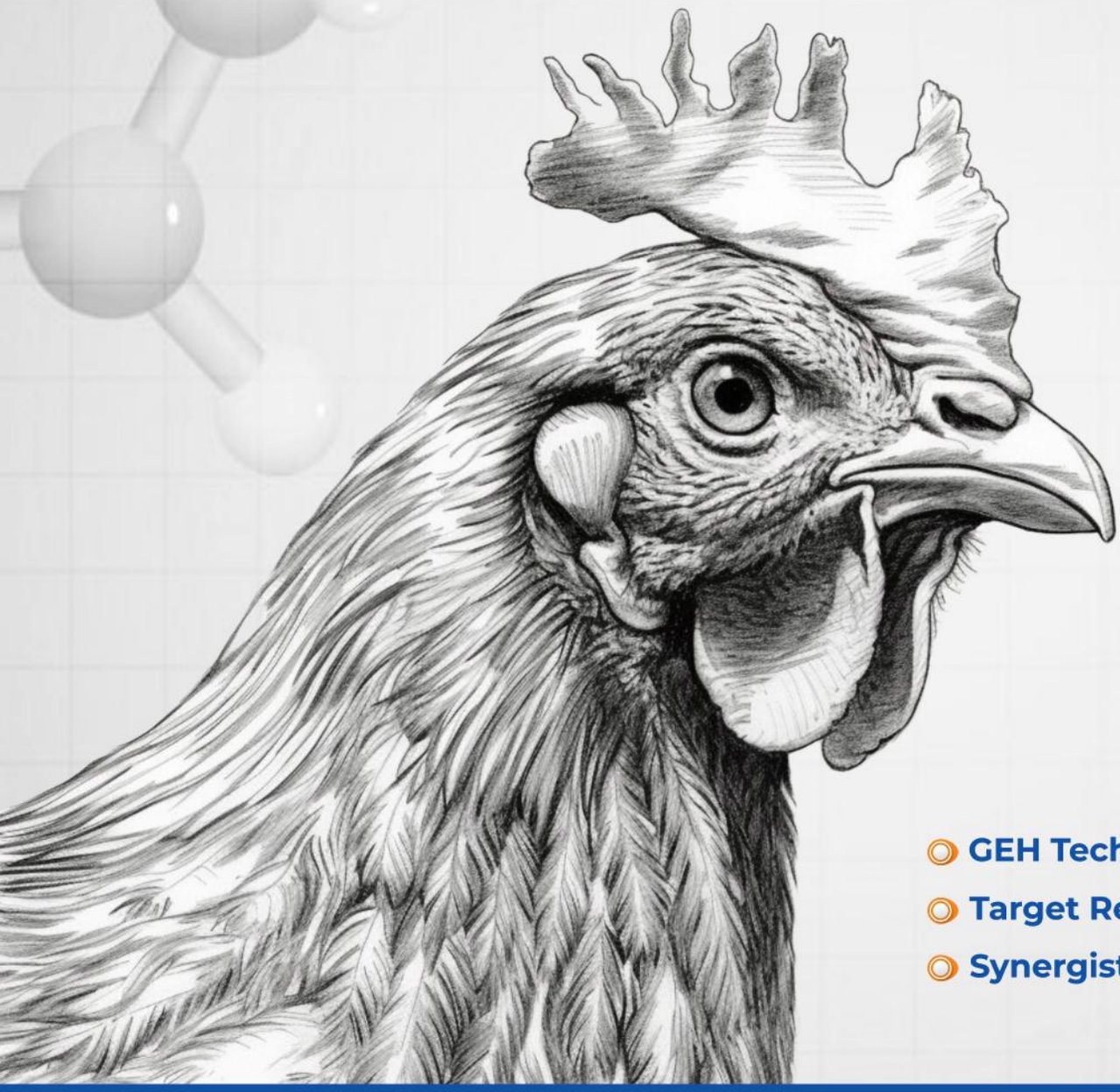

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Protective matrix of acidifier for sustainable acidification in poultry to overcome antibiotic resistance

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"Nutrinomics, is the merging of the nutrition and health economics disciplines to assess the impact of nutrition on animal health and disease and to illustrate the health and economic aspects of specific changes in the daily nutrition and nutrition recommendations through the lens of cost effectiveness".

Introduction

High levels of production and efficient feed conversion are the need of the modern livestock industry which to a certain extent could be achieved by using specific feed additives. Feed additives are of great interest in the poultry industry due to their property to promote growth and performance. Common feed additives used in poultry diets include antibiotics, antioxidants, emulsifiers, binders, pH control agents and enzymes.

Antibiotic feed additives as growth promoters have long been supplemented to poultry feed to stabilize the intestinal microbial flora, improve the general performances, and prevent some specific intestinal pathology. However, because of the growing concern over the transmission and proliferation of resistant bacteria via the food chain, the European Union (EU) in 2006 banned antibiotic growth promoters to be used as additives in animal nutrition.

Antibiotic growth promoters (AGPs) and antibiotic resistance are closely related, this compelled researchers to explore the utility of other non-therapeutic alternatives like enzymes, probiotics, prebiotics, herbs, essential oils, immunostimulants and organic acids as feed additives in poultry production. The focus of alternative strategies has been to prevent proliferation of pathogenic bacteria and modulation of indigenous bacteria so that the health, immune status, and performance are improved. Feed acidifiers unequivocally satisfy the required criteria.

Feed acidifiers which are natural growth promoters, are acids included in feeds to lower the pH of the feed, gut, and microbial cytoplasm thereby inhibiting the growth of pathogenic intestinal microflora. Acidifiers can be organic/inorganic acids or associated salts that are added to the poultry feed to exert their antimicrobial action both in the feed and in the GI-tract. Organic acids have been identified as best alternative to antibiotic growth promoters by optimising the pH of gut, increasing the digestibility of the several minerals and thus increasing the performance of poultry economically.

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Antibiotic Growth Promoter (AGPs):

The term AGP is used to describe any medicine that destroys or inhibits bacteria and is administered at a low or subtherapeutic dose. The AGP are used to help the growing animal to digest their food more efficiently, get maximum benefit from it and allow them to develop into strong and healthy individual.

Proposed Mechanism of AGPs:

At least four mechanisms have been proposed as explanations of antibiotic mediated growth enhancement:

1. Inhibition of sub-clinical infections
2. Reduction of growth-depressing microbial metabolites
3. Reduction of microbial use of nutrients
4. Enhanced uptake and use of nutrients through the thinner intestinal wall associated with antibiotic-fed animals.

Summary of Physiological, Nutritional and Metabolic Effects of Antibiotic Growth Promoter

	Physiological	Nutritional	Metabolic
Increase	- Nutrient absorption - Feed intake	- Energy retention - Nitrogen retention - Vitamin absorption - Trace element absorption - Fatty acid absorption - Glucose absorption - Calcium absorption - Plasma nutrients	- Liver protein synthesis - Gut alkaline phosphatase
Decrease	- Food transit time - Gut wall diameter - Gut wall length - Gut wall weight - Faecal moisture - Mucosal cell turnover	- Gut energy loss - Vitamin synthesis	- Ammonia production - Toxic amine production - Aromatic phenols - Bile degradation products - Fatty acid oxidation - Faecal fat excretion - Gut microbial urease

The curse of AGPs:

Apart from the advantageous impact of AGPs, it has some drawbacks also. The major drawback of AGPs is emergence of antibiotic resistant bacteria. The situation is grave and is cause of concern for human health, as it will leads to emergence of antibiotic resistant bacteria in human.

Organic Acids: An Alternate to AGPs:

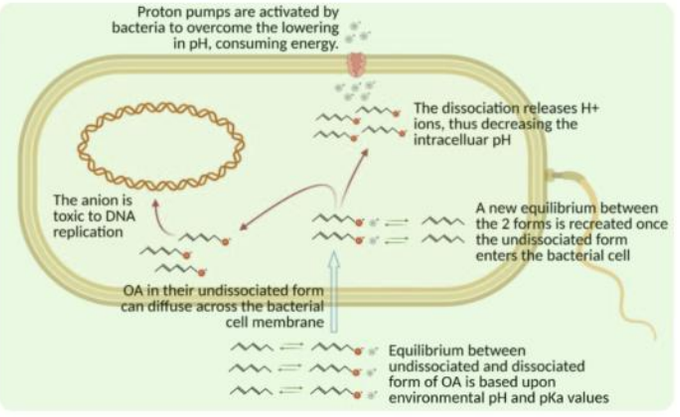
Several alternatives have been proposed to replace AGPs, common alternatives applied in broiler diets are prebiotics, probiotics and organic acids. Organic acids are weak acids, which when used singularly or in combination, will kill pathogenic microbes, reduce the pH and acidify the gut.

The protective matrix of these acids is determined by their pKa value. The pKa is the negative log of the acid dissociation constant or Ka value and used to indicate the strength of an acid. Lower the pKa value, more stronger is the acid. That is, the lower value indicates the acid more fully dissociates in water.

Table showing effects of organic acids and salts in poultry nutrition

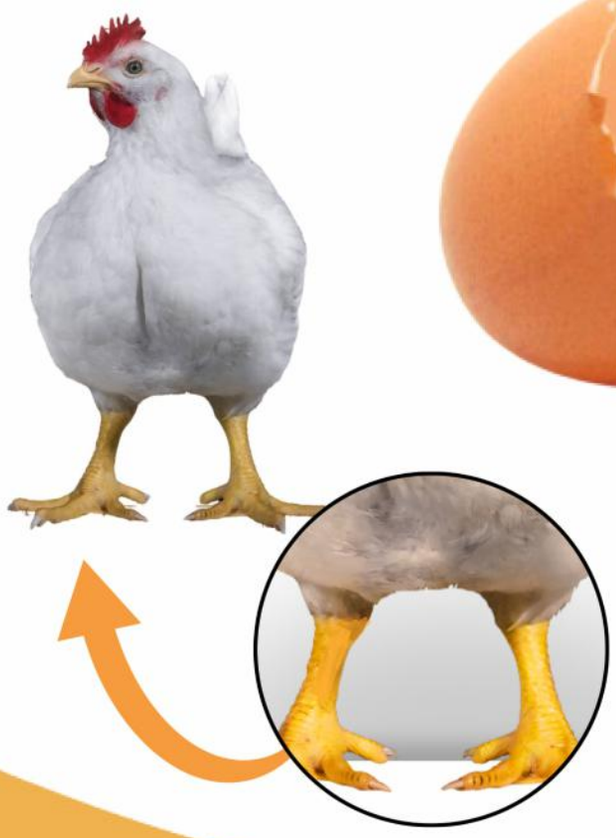
	Effective form	Effects
Feed	H+	pH reduction
		Reduction of acid binding capacity
	H+ and Anion	Reduction of microbial growth
		Antibacterial effects
Intestinal Tract	H+	pH reduction in stomach and duodenum
		Improved pepsin activity
	Anion	Complexing agents for cations
		(Ca++, Mg++, Fe++, Cu++, Zn++)
	H+ and Anion	Antibacterial effects
		Change in microbial concentrations
Feed		Energy Supply

Organic Acids and it's Mechanism of Action



Organic Acid in the intestine

Organic Acid are natural component of the GI environment. In broiler chickens, typical total SCFA concentrations have been reported to be in the range of 2-12 and 40-100 µmol/g digesta in the small intestine and caeca (Rehman et al., 2007).



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Organic Acid & Intestinal Morphology:

Organic acid has a positive influence on intestinal morphology, as they increase the length of villi, so more absorptive surface area are for greater absorption of digesta.

Organic acid on Immune system.

It is said that major portion of immunity is in gut, the interaction of organic acid with gut microbiota positively influences the gut associated lymphoid tissue. It's been observed that addition of organic acids in feed improves the resistance to pathogen, vaccine response/ protection and general health beyond the intestine

The overall benefit of Acidifier is far greater in comparison to AGP, since the acids used are weak acid the safety margin during handling and consumption are also high. Keeping all the advantages of acidifier over AGPs, ACIPLEX™ was formulated.

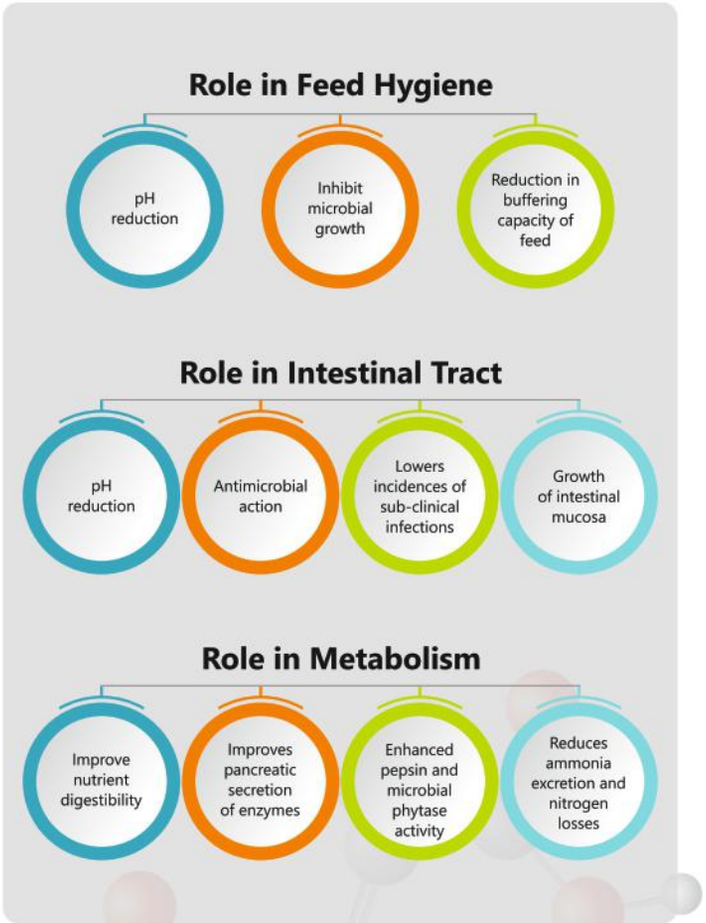
ACIPLEX™: Aciplex is an innovative poultry feed acidifier based on synergistically combination of organic acids and their salts such as Fumaric acid, Citric acid, Calcium propionate, Sodium citrate & Sodium formate. **ACIPLEX™** is having non corrosive and non-stringent properties.

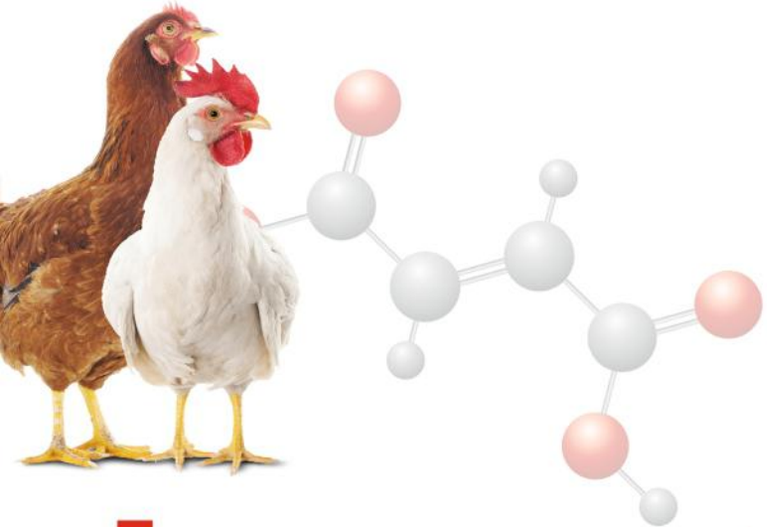
ACIPLEX™ components and their properties

Acid	Formula	pKa
Formic	HCOOH	3.75
Propionic	CH_3CH_2COOH	4.88
Fumaric	COOHCH:CHCOOH	3.02
Citric	$COOHCH_2C(OH)(COOH)CH_2COOH$	3.13

Effect of ACIPLEX™ on different microbes

Organic Acid/Salts	Activity Spectrum
Fumaric Acid	*Antibacterial activity (E.coli, Salmonella sp., Clostridia perfingens)*
Citric Acid	*Listeria sp, Salmonella typhimurium, E.coli, Aspergillus sp.*
Calcium Propionate	*Listeria sp, Salmonella typhimurium, E.coli, Aspergillus sp., Clostridium perfringens, Fusarium sps*
Sodium Citrate	*Fusarium sps*
Sodium Formate	*Streptococcus sp., Clostridium perfringens, E.coli, Salmonella sp., Campylobacter jejuni*





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(1α 25 (OH)2 D3)
Final Bio Availability % ???

Other Metabolite A
25 hydroxy D3 (25 OH D3)

STRESS

1 α 25 hydroxy D3
(1 α 25 (OH)2 D3)
Final Bio Availability % ???

Other Metabolite B
1 Alpha hydroxy D3

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1 α 25 hydroxy D3
(1 α 25 (OH)2 D3)
Final Bio Availability % ???

1α 25 Dihydroxy D3

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100%
Direct Bio Availability

Absorption % ???

Absorption % ???

Absorption % ???

100% Direct Absorption

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Layers: 100 Gms per Ton of Feed or 1ml for 56 birds.
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Bentoli Leads the Way in Feed Safety
with Strategic Support to WB Poultry Sector

In a significant step towards improving feed safety and supporting poultry farmers, **Bentoli** organized a Poultry Farmers' Meet in association with the **West Bengal Poultry Federation (WBPF)** at the Federation's office in Mednipore. The event witnessed active participation from 25 key poultry farmers from the region and served as a platform to address critical issues related to mycotoxin management in poultry feed.

The centerpiece of the event was the **handover of a state-of-the-art Rapid Mycotoxin Analyzer** to the West Bengal Poultry Federation by Bentoli. This contribution marks a collaborative effort to empower local farmers with tools that enable faster, more accurate detection of mycotoxins in feed and raw materials—an essential factor for maintaining poultry health and ensuring feed quality.

Mr. Prasanna Balaji, Assistant Manager R&D, installed the analyzer at the WBPF office and demonstrated its usage. The rapid detection capability of the device, which delivers toxin results within minutes, was well received by the attending farmers.

Dr. Sushanta Saha, Regional Sales Director-South & South East Asia, addressed the audience, reiterating Bentoli's mission to support the livestock community through innovative solutions.

"Feed contamination from mycotoxins remains one of the major hidden challenges in poultry farming. By providing this rapid analyzer, Bentoli aims to equip farmers with a proactive tool to safeguard poultry health and minimize economic losses," he said.

The gesture was highly appreciated by the WBPF. **Mr. Madhan Mohan Maity**, General Secretary, WBPF, lauded the initiative, stating:

"Bentoli has always demonstrated a strong commitment to farmer welfare. This contribution will significantly enhance the diagnostic capabilities of our members and improve decision-making at the field level."

The attending farmers shared their on-ground experiences and highlighted the need for accessible technologies like rapid toxin testing. Many expressed gratitude for Bentoli's support and acknowledged the importance of such initiatives in their daily operations.

Mr. Tapan Kumar Ghosh, Advisor, East India Region, further emphasized the financial impact of mycotoxin-contaminated feed and discussed Bentoli's ongoing efforts to provide holistic mitigation strategies and field-level support.

The event concluded with a vote of thanks delivered by **Mr. Partha** (TSM, Bardhaman) and **Mr. Ayan** (SE, Contai) who reaffirmed Bentoli's commitment to strengthening farmer relationships through continuous engagement and practical solutions for the poultry industry.

This initiative underscores Bentoli's long-standing vision of delivering **"Better Feed, Better Food"** by bridging the gap between advanced feed technologies and the farmer community.

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Bentoli® is a global provider of high-quality feed additives and consultative solutions for the animal and aquaculture industries. Specializing in preservatives, processing aids, and nutritional additives, the company partners closely with feed manufacturers and livestock operators to deliver measurable improvements in performance and profitability. With active R&D, dedicated trial farms , and manufacturing plants in North America and Asia, Bentoli combines innovation with deep industry insight to offer tailored, results-driven solutions. Its global reach is supported by a strong network of sales offices and distributor partners, earning its reputation as a trusted name in animal nutrition.

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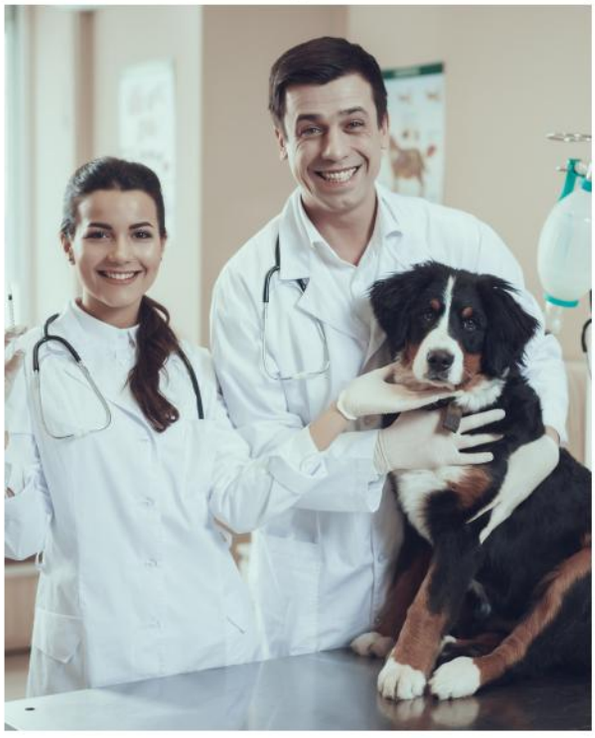
Legend SERIES 16

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

MR. PRAKASH KHAIRE

PARTNER, VETINA HEATHCARE

1. **Are you originally from Pune?**
   Yes
2. **What is the best thing you like in your journey?**
   To have my own company which creates employers Opportunities for the youth of the country.
3. **What is the right motivation you like in the journey from starting till now?**
   To be successful in the set mission gives one the highest motivation.
4. **Why you choose the Poultry / Livestock / companion animal profession?**
   It helps farmers in the country to generate opportunities of self employment.
5. **As compared to other big players in the industry, how is your organisation different?**
   We believe in empowerment and encourage employees to take decision.
6. **Please tell us about your family.**
   I have one daughter who is married and settled abroad.
7. **What you think about your organisation's roadmap of next 5 years?**
   We will be one of the leading animal healthcare product supplying company in the country.
8. **What is your message to the next generation entered in this business?**
   Take risk, work hard , believe in values in life, money does not bring happiness.
9. **What are your favourite eatery food?**
   South Indian Food
10. **What are your hobbies?**
    Watching and reading success stories.
11. **Any remarks you would like to add?**
    While one does business always think of what value you are creating for your customer.



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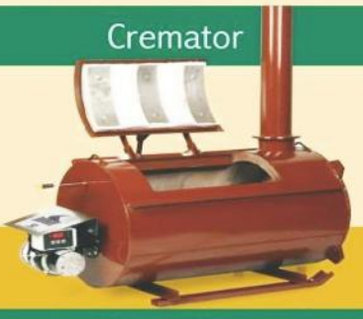

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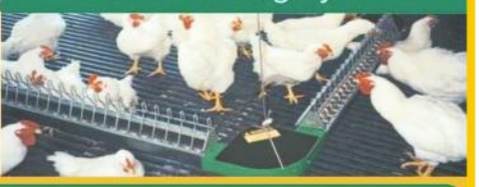

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Exhibitors
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Visitors
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2025 CONFERENCE

VIV International Summit 2025
Internationalization Challenges & High Quality Development
Poultry Sector - Comprehensive (Duck included)
Swine Sector

AgriBITs China

Animal Health Innovation Forum

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VIV Select China 2025:
Visitor Pre-registration is Now Open

SELECT CHINA 2025
NANJING, CHINA
10-12 SEPTEMBER

Visitor registration is now officially open for VIV Select China, the premier platform for showcasing cutting-edge innovations and fostering business collaborations in the animal protein industry in China. Scheduled from September 10-12 at Nanjing International Expo Center in Nanjing, VIV Select China is set to gather pioneers and leaders from the swine and poultry, feed ingredients, additives, feed / feed additives equipment, farming equipment, bio-products, breeding technology, animal health, veterinary, egg processing sectors, and more.

With 48,000-square-meter exhibition space, VIV Select China gears up to host over 500 exhibitors from leading Chinese enterprises such as Big Herdsman, Guangzhou Guangxing, Nxin, Famsun, Zhengchang, Shandong Kaicheng, Melan Group, Zhongmu, Kexing, Ruisheng, Dongxiao, Highvarve.

The Inaugural AI+ Smart Farming Area

As a global hub connecting supply and demand, the event will showcase hundreds of premium products while introducing its inaugural **AI+ Smart Farming Area**. This area will highlight integrated applications of AI, IoT, and sustainable technologies, the visitor will experience precise production management and digital breeding processes. By driving digital transformation across industry, the platform empowers businesses to align with international standards, integrate into global supply chains, and accelerate their expansion on the world stage. Reuniting in person and forging profitable business deals at this event is eagerly anticipated.

Key Conference Highlights: AI+, Smart Farming, Green Transformation

VIV Select China 2025 conference program centers on a triple framework of "**Technological Breakthroughs** (AI & Smart Farming)—**Green Transformation** (Low-Carbon/Circular Economy)—**Global Collaboration for Overseas Expansion** (Standards/Supply Chain)". It highlights how AI and smart technologies enhance production efficiency and product quality, drives low-carbon transformation in the livestock sector to reduce emissions and resource consumption, and advances circular economy models to improve resource utilization and waste reduction.

The **VIV International Summit** advocates breaking the cycle of domestic competition through international cooperation, evolving from product-centric exports to full-chain collaboration, and building standardized global systems and resilient supply chains to support the sustainable globalization of China's livestock industry. **AgriBITs**, making its debut in China, will also showcase global perspectives on AI, digitalization, and automation innovations in the livestock industry.

Strengthening Network and Business Development

To enhance business value through more efficient connections and fulfill its mission as a commercial bridge, VIV Select China will continue its **Hosted Buyer Program** in 2025 to recruit buyers with genuine procurement needs. Eligible attendees can apply via the Hosted Buyer page on the official VIV Select China website. Approved Hosted Buyers will enjoy benefits such as complimentary accommodation and access to exclusive services like V-Match.

V-Match, a pioneering matching service launched by VIV Select China in 2024, streamlines interactions by organizing buyers in a dedicated lounge while exhibitors target relevant candidates based on their profiles. This targeted approach significantly improves efficiency, enabling exhibitors to rapidly identify suitable partners and unlock new business opportunities. In the previous edition, the program facilitated 298 successful matches, demonstrating its effectiveness.

A Seamless and Convenient VIV Select China Experience

China has further upgraded its visa-free policies, expanding unilateral visa exemptions to 34 countries and extending transit visa-free stays to 240 hours. At the same time, Nanjing City officially launched a new comprehensive service platform "In-Nanjing", seamlessly facilitating the entry of international visitors.

Don't miss your chance to be at the forefront of innovation. See you at **VIV Select China 2025** in Nanjing from 10–12 September at the Nanjing International Expo Center Halls 4–6 and be a part of driving the animal protein industry forward!

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IPEMA/Poultry India Supports Second Nepal Edition of IPR Knowledge Review in Bharatpur, Chitwan

IPEMA

Following the resounding success of its inaugural edition in Kathmandu, the **second Nepal edition of the IPR Knowledge Review** was held with great enthusiasm on **May 29, 2025**, in **Bharatpur, Chitwan**, the heartland of Nepal's poultry industry. Themed **"Resilient Poultry Industry: Adapting for Sustainability & Economic Success,"** the seminar brought together key stakeholders from across South Asia to deliberate on the future of poultry in an evolving global landscape.

This knowledge-driven initiative was **proudly supported by IPEMA (Indian Poultry Equipment Manufacturers Association) and Poultry India**, underscoring the organizations' commitment to regional collaboration, sustainability, and innovation in poultry production.

The event witnessed the presence of industry veterans, policymakers, entrepreneurs, veterinarians, and researchers, all converging to address the sector's emerging challenges—ranging from climate volatility and biosecurity threats to shifting market dynamics.

Mr. Uday Singh Bayas, **President of IPEMA and Poultry India**, graced the event as **Guest of Honour** and was **formally felicitated** for his contributions to fostering Indo-Nepal collaboration in the poultry sector. His presence reinforced the importance of cross-border knowledge sharing and capacity building in the South Asian poultry ecosystem.

Prof. (Dr.) P.K. Shukla, President of the Indian Poultry Science Association and Head of the Department of Poultry Science at DUVASU, Mathura, delivered the keynote address. Dr. Shukla underscored the urgent need to adopt sustainable practices, promote circular economy models, and leverage automation and precision farming for a resilient poultry industry. He highlighted innovations in renewable energy, efficient resource utilization, and antibiotic alternatives as pathways to long-term sustainability.

Key Highlights from the Technical Sessions included:

- **Dr. Dinesh Gautam and Prof. (Dr.) Subir Singh** presented on **"Poultry Industry in Nepal: Sustaining Growth amid Uncertainty,"** focusing on consolidation, consumer trends, and the imperative to develop export-ready value chains.
- **Dr. A.S. Ranade** introduced strategies for **"Sustainable Feed Innovations,"** exploring alternative feed resources, nanotechnology, and biotechnology applications.
- **Dr. Bijaya Kr. Shrestha and Prof. (Dr.) R.K. Bhattarai** addressed **infectious disease threats** and emerging disease management technologies.
- **Dr. Santosh Ire** emphasized **"Water Health as a Pillar of Sustainable Poultry Farming,"** presenting Boom-Ox, an IoT-enabled water disinfection and acidification solution.
- **Dr. Pawan Kumar**, President of the Bihar Poultry Farmers Association, delivered a talk titled **"Protein Power,"** advocating for regional awareness and collaboration to tackle protein deficiency.

The seminar also featured a compelling panel discussion on **"Strengthening Indo-Nepal Collaboration in Poultry Science, Industry, and Sustainability,"** moderated by Prof. (Dr.) Subir Singh. Panelists discussed collaborative research, trade potential, and farmer-centric innovations to advance the sector.

The event concluded with a heartfelt vote of thanks from Prof. Singh, who reaffirmed the importance of regional partnerships, innovation, and continuous learning in building a resilient and economically successful poultry industry in South Asia.

As we look ahead, **IPEMA and Poultry India are delighted to invite stakeholders, innovators, and industry leaders to the 17th Poultry India Expo**, scheduled for **2025 in Hyderabad, India**. The Expo promises to be a world-class platform to discover cutting-edge technologies, exchange global insights, and foster transformative partnerships. We look forward to welcoming you to this premier event that continues to shape the future of poultry in the region.

For media inquiries or further information, please contact:
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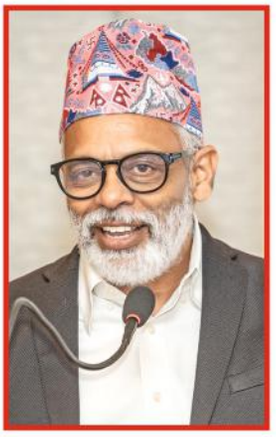



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Heat Stress Management in Poultry

Dr B C Dutta
Poultry Consultant | www.drbcdutta.com
Youtube: PoultryTroubleshooter_BDutta

What is Heat Stress?

- A situation when chicken faces difficulty in achieving balance between body heat production & body heat loss
- Genetics, Feather cover, Age, Body Weight, Egg Production stage & flock maintenance all affect a chicken's heat tolerance
- Chickens are homeotherms & regulate their body Temperature across a wide range of external Temperature.
- But continuous high climate Temp overwhelm the thermoregulatory mechanisms, resulting imbalance between the amount of metabolic heat produced & their capacity to dissipate body heat in the environment

Key environmental factors contributing to Heat stress in poultry

- Consistent Global worming induced Temperature elevation
- Uprooting Trees & Deforestation in the name of urbanization
- Filling of waterbodies
- Indiscriminate Mining & Urbanization in Hills

Physiological Changes and Production Impact of Heat Stress

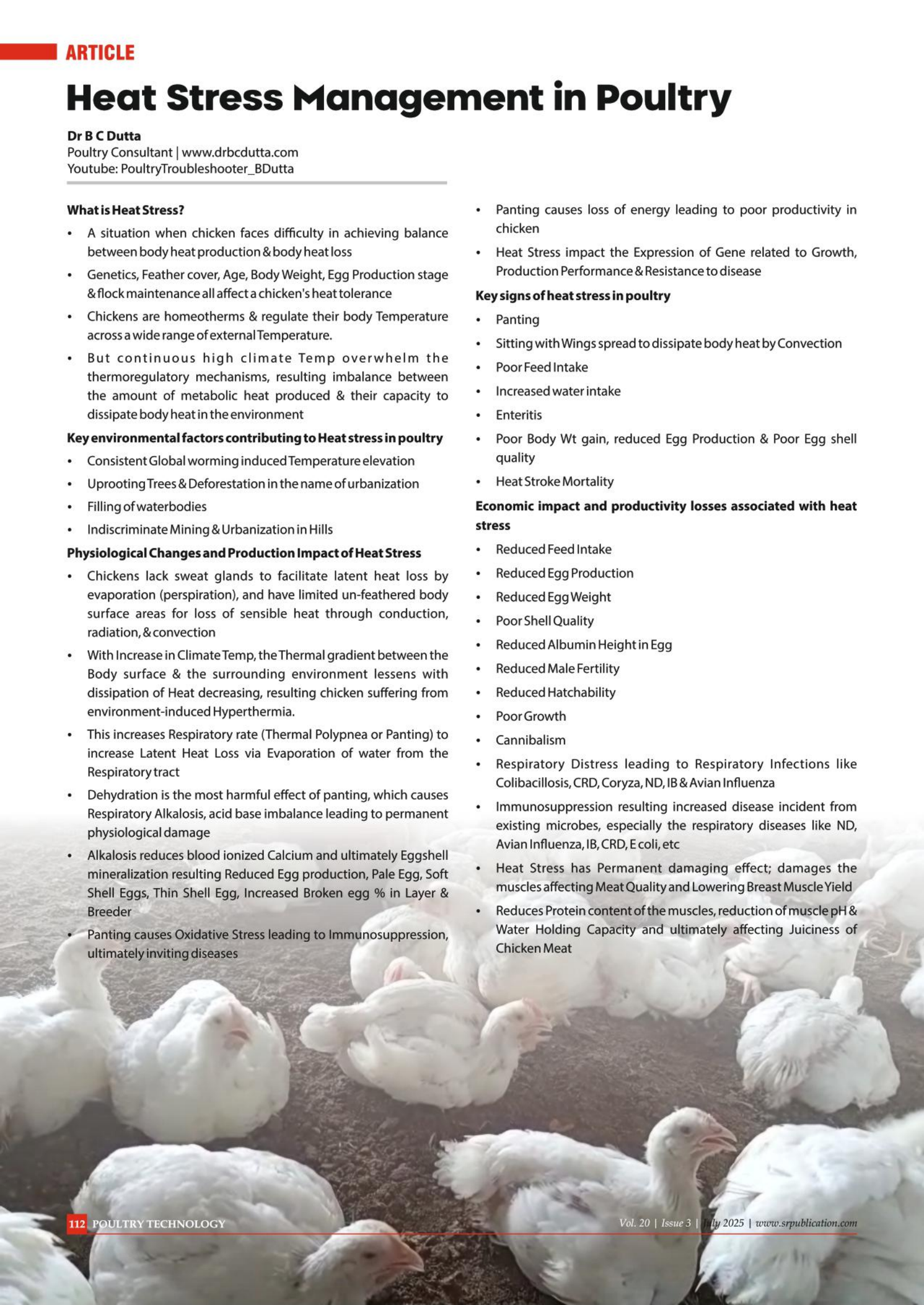
- Chickens lack sweat glands to facilitate latent heat loss by evaporation (perspiration), and have limited un-feathered body surface areas for loss of sensible heat through conduction, radiation, & convection
- With Increase in Climate Temp, the Thermal gradient between the Body surface & the surrounding environment lessens with dissipation of Heat decreasing, resulting chicken suffering from environment-induced Hyperthermia.
- This increases Respiratory rate (Thermal Polypnea or Panting) to increase Latent Heat Loss via Evaporation of water from the Respiratory tract
- Dehydration is the most harmful effect of panting, which causes Respiratory Alkalosis, acid base imbalance leading to permanent physiological damage
- Alkalosis reduces blood ionized Calcium and ultimately Eggshell mineralization resulting Reduced Egg production, Pale Egg, Soft Shell Eggs, Thin Shell Egg, Increased Broken egg % in Layer & Breeder
- Panting causes Oxidative Stress leading to Immunosuppression, ultimately inviting diseases
- Panting causes loss of energy leading to poor productivity in chicken
- Heat Stress impact the Expression of Gene related to Growth, Production Performance & Resistance to disease

Key signs of heat stress in poultry

- Panting
- Sitting with Wings spread to dissipate body heat by Convection
- Poor Feed Intake
- Increased water intake
- Enteritis
- Poor Body Wt gain, reduced Egg Production & Poor Egg shell quality
- Heat Stroke Mortality

Economic impact and productivity losses associated with heat stress

- Reduced Feed Intake
- Reduced Egg Production
- Reduced Egg Weight
- Poor Shell Quality
- Reduced Albumin Height in Egg
- Reduced Male Fertility
- Reduced Hatchability
- Poor Growth
- Cannibalism
- Respiratory Distress leading to Respiratory Infections like Colibacillosis, CRD, Coryza, ND, IB & Avian Influenza
- Immunosuppression resulting increased disease incident from existing microbes, especially the respiratory diseases like ND, Avian Influenza, IB, CRD, E coli, etc
- Heat Stress has Permanent damaging effect; damages the muscles affecting Meat Quality and Lowering Breast Muscle Yield
- Reduces Protein content of the muscles, reduction of muscle pH & Water Holding Capacity and ultimately affecting Juiciness of Chicken Meat



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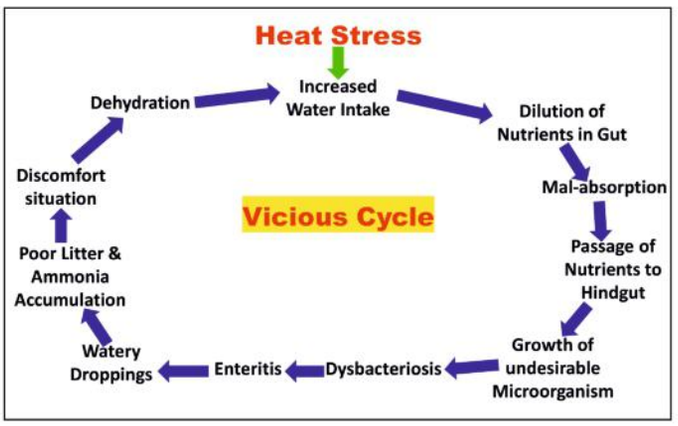
- Disturbs Lipid metabolism by affecting enzyme function in lipid breakdown causing Excess Fat deposition instead of converting to meat

Major Health risks of chicken during summer

- Immunosuppression and increased incidence of diseases from existing microbes, especially the respiratory diseases like ND, AI, IB, CRD, E coli, etc
- Oxidative Stress causes Gut Health Problem, reduced Digestion with Reduced Productivity
- Under Heat Stress, water intake increases leading to dilution of Nutrients inside intestinal lumen resulting mal-absorption and passage of nutrients into the hind gut
- This favours growth of undesirable microorganism, loss of microbial equilibrium in the gut, Dysbacteriosis, Enteritis, Watery dropping, Wet Litter condition, Ammonia accumulation resulting further increase in Humidity at the bird's level leading to increase discomfort level & dehydration. The chicken will consume more water and the condition aggravates in a cyclic manner (Vicious cycle)
- In closed EC house, with Increase in climate Temperature, control system is failing, especially with high Humidity outside. Evaporative Cooling & Tunnel Ventilation failed to maintain Comfort environment inside with rising Climate Temperature outside creating many Blank spot in the middle of EC house causing Breathing problem leading to Panting



Impacts on immunity, post vaccination response & disease susceptibility

- Heat stress impairs a chicken's immune system, leading to a reduced response to vaccines, suppressing the production of antibodies and affecting the function of immune cells, particularly lymphocytes, due to the atrophy of immune organs like thymus under high temperatures. Heat stress makes it harder for chickens to fight off infections after vaccination and increases their vulnerability to disease
- Heat stress can significantly lower the levels of circulating antibodies (like IgM and IgG) produced after vaccination, resulting in a weaker immune response against pathogens
- High Temp cause atrophy of thymus, leading to decreased T-cell production and impaired cell-mediated immunity
- Heat stress increases corticosteroid levels and thus the immune system.
- Heat stress disrupt the function of immune cells, macrophages & lymphocytes, affecting their ability to recognize and fight pathogens.
- Heat stress damage the intestinal lining, allowing harmful bacteria to enter the bloodstream, further compromising immune function

Monitoring Heat stress in poultry

- Difference in activity during Cool hours & Hot hours
- Posture of the birds
- Feed Intake with increasing Temperature
- Health status after Temperature increase
- Degree of Panting or Respiratory distress
- Egg Production & Egg Shell quality status with Increasing Temp

Poultry House Environmental modifications to combat Heat Stress

Poultry House Environment need to made near comfort zone in terms of Temperature Humidity & Ventilation. Closed EC house is the perfect answer for chicken. Alternative actions are:

- Plantation of Tress on both side
- Farm construction near forest or under Coconut farming or any big trees
- Reduce Stocking Density
- In open house system action must be taken to REDUCE TEMPERATURE at Birds level through

i) Elevated Roof, increased centre height than standard practice
ii) Coated Roofing materials (Tin or Asbestos) or thatched roof
iii) Extended both side roof overhang to prevent entry of direct Sunlight
iv) Thatching of Roof by Agricultural waste
v) False Ceiling by Thermostat Aluminium foil or agricultural waste
vi) Constructing Side Pandals (Leaned Roof Over-hang 1 meter)
vii) Hanging of Gunny with Dipper on both side during hot hours keeping ventilation on top
viii) Ceiling fans in case of Broiler and Circulatory fans in Layer or breeder
ix) Springler on Rooftop
x) Fogger inside the shed

Nutritional Modification to combat Heat Stress in Summer

1. **Sodium bicarbonate**

- **pH regulation:** When birds pant heavily in hot environments, birds lose carbon dioxide due to excessive Panting, leading to a rise in blood pH (alkalosis). Sodium bicarbonate acts as a buffering agent, providing bicarbonate ions that help maintain a balanced blood pH.
- **Improved feed and water intake:** Adding sodium bicarbonate to drinking water helps increase water consumption, which is vital for heat regulation.
- **Enhanced growth performance:** Studies shown that supplementing sodium bicarbonate in the diet of heat-stressed poultry can improve body weight gain and FCR.

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- Promotes optimal development of gut microbiota
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- **Eggshell quality:** For laying hens, sodium bicarbonate helps maintaining good eggshell quality as the bicarbonate ion is involved in shell formation.

2. **Electrolytes**

- Electrolytes help maintaining proper fluid balance and blood pH levels, which are significantly disrupted when chickens panting heavily in hot environments, leading to the loss of essential minerals like Na & K through their respiratory system
- Supplementing electrolytes in the drinking water can help replenish these lost minerals and alleviate the negative effects of heat stress

3. **Vitamin C**

- **Antioxidant activity:** Vitamin C scavenges free radicals generated during heat stress, protecting cells & tissues from Oxidative stress induced damage
- **Immune system support:** Vitamin C is vital for proper immune function, which can be compromised under heat stress.
- **Hormone regulation:** Vitamin C is involved in the synthesis of stress hormones, helping to manage their levels during heat stress.
- **Improved performance:** Supplementation with Vitamin C can lead to better growth rates, feed efficiency, and egg production & egg shell quality in heat-stressed chickens. Vit C helps maintaining sperm production in breeder male during summer stress
- **Reduced oxidative damage:** Heat stress can cause oxidative damage to the liver and other organs, which Vitamin C helps to mitigate.
- **Blood pH regulation:** Studies suggest that Vitamin C can help maintain proper blood pH levels, which can be disrupted under heat stress

4. **Ginger, Turmeric** few other herbs can help by reducing mortality, improving nutrient digestion, and stimulating the immune system
5. **Vit A, D, E** & **Vit B** Complex help reduces heat stress mortality
6. **Vitamin E, Zn & Se** can help mitigating heat stress with antioxidant parameter
7. **Betaine** help with reducing metabolic heat production thus helps reducing heat stress
8. **Chromium**

- Chromium enhances insulin sensitivity, allowing better utilization of glucose, crucial for energy production during heat stress when energy demands are high
- Chromium addition can lead to decreased levels of corticosterone, a stress hormone released in response to heat stress, thereby promoting a calmer physiological state
- Chromium as antioxidant, helps to combat oxidative stress caused by heat stress damaging cells and tissues
- Performance Improvement: by mitigating the negative impacts of heat stress on metabolism & stress response, supplementing chromium can positively influence growth rate, feed efficiency, and egg production in chicken

Drinking Water Management

Cold drinking water supply 24 hours; the key of combating heat stress, can be ensured by

- Frequent filling of water tank, and not to allow water to become hot in tank
- Keeping water Tank under shed, even inside farm shed.
- Open Tank may be made white painted to reduce heating of water inside.
- Underground water pipeline from tank to farm shed
- Covering of external water pipeline by wet gunny during summer days
- For manual chick drinker, change water frequently

Heat Stress Mitigation Keys

- Reduce Temperature of Poultry house with available Infrastructure & inputs applying common sense
- Reduce Stocking density or allow more space to each birds
- Improve air movement at birds' level
- Increase nutrient density in feed, especially the micronutrients.
- Modify feeding practice towards cool hour feeding
- Supply cold drinking water 24 hours

BULLETIN

Appointment

Avitech
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Mr. Raj K Gera has been appointed as President – Sales (Domestic & International), Avitech Nutrition, effective June 2, 2025.

Mr. Gera joins Avitech Nutrition with over 30 years of experience the animal health sector. He began his professional career with Ranbaxy Laboratories in November 1993. In his most recent role, Mr. Gera served as Managing Director of Hester Biosciences (Nepal and Tanzania), where he led international operations and contributed significantly to market expansion and business performance in key regions.

Avitech Nutrition is expanding into global markets and focusing on livestock as part of its ongoing growth strategy.

Mr Gera's leadership will be pivotal in advancing these priority areas for Avitech Nutrition.

Avitech welcomes Mr. Raj K Gera and looks forward to his contribution in accelerating the company's sales growth.

Moisture as a Critical Determinant of Feed Hygiene and Safety:

Implications for Microbial Control and Livestock Health

The hygiene and safety of animal feed are of paramount importance in the broader context of animal health, productivity, and food safety. Feed often serves as a reservoir and transmission vector for a variety of microorganisms, many of which originate or proliferate during storage. Environmental fluctuations—such as irregular precipitation, extended droughts, and shifts in temperature and humidity—compromise the integrity of feed drying and storage processes. These external conditions, combined with intrinsic feed characteristics (e.g., pH, oxygen levels, nutrient profile, and moisture content), form a complex ecosystem that can foster microbial contamination.

Among these variables, **moisture** stands out as a critical factor. While a certain baseline moisture is necessary for processing and animal consumption, elevated levels directly influence microbial growth and toxin production, ultimately affecting the health and performance of livestock.

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

Moisture and Microbial Dynamics in Feed

Microbial activity in feed is directly influenced by moisture content, particularly by the amount of free water available, measured as water activity (a_w). Water activity above 0.70 can support the growth of spoilage organisms, while most molds and bacteria thrive at levels above 0.80 [EFSA, 2010]. High moisture levels increase the likelihood of microbial proliferation, especially in warm and humid climates where proper drying and storage are challenging.

To ensure quality, yield, and profitability, feed manufacturers monitor moisture levels throughout all stages of processing, including raw materials, mash, and pellets. Managing moisture is a persistent challenge due to variable climatic conditions, inconsistencies in raw material quality, and technical limitations. The standard method for assessing water content is through measuring moisture content, typically expressed as a percentage of the feed's total weight. However, a more accurate indicator of microbial risk is water activity (a_w), which represents the amount of free water available to support microbial and biochemical activity. Microbial growth is minimal below specific water activity thresholds, but as water activity (a_w) rises, the risk of microbial contamination increases substantially (Roos, 2003). Lower water activity (a_w) correlates with enhanced feed stability and reduced microbial growth potential.

Microbial Growth and water activity Dependence

Various microorganisms such as bacteria, yeasts, and molds thrive under specific water activity and temperature conditions.

Water Activity (a_w)	Microorganism type
0.91	Gram-negative Bacteria
0.88	Yeast (Practical Limit)
0.86	Gram-positive Bacteria
0.80	Mycotoxins production
0.70	Molds (Practical Limits)
0.60	Absolute limits (all Organisms)

Maintaining water activity below 0.70 is, therefore, essential for minimizing microbial growth during storage and distribution phases [EFSA, 2010; FAO, 1999].

Water Activity Testing

Factors Influencing Moisture-Driven Spoilage

Several factors interact synergistically to drive microbial proliferation in feed:

- **Temperature and Humidity**: Elevated temperatures cause water migration within feed particles; humidity contributes to condensation, both increasing free water availability.
- **pH and Oxygen Levels**: These support or suppress microbial metabolism depending on the organism type.
- **Storage Conditions**: Inadequate ventilation, poor insulation, and improper packaging can exacerbate moisture retention.

The result is an environment ripe for microbial activity, leading to the degradation of nutrients, physical spoilage, and toxic metabolite production.

Key Microorganisms and Associated Hazards

Molds

Species such as *Aspergillus flavus* and *Penicillium spp.* flourish in high-moisture environments, producing dangerous **mycotoxins** including aflatoxins and ochratoxins. These compounds have been associated with immunosuppression, hepatotoxicity, reproductive failure, and poor growth performance [Whitlow & Hagler, 2005].

Bacteria

Pathogens such as *Salmonella spp.* and *Escherichia coli* may colonize improperly stored feed, particularly when moisture exceeds critical thresholds, increasing the risk of enteric diseases in livestock [Jones & Hagler, 2000].

Yeasts

Yeasts ferment residual sugars in moist feed, contributing to off-odors, clumping, spoilage, and loss of nutritional value.

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Consequences of Excess Moisture in Feed

Consequence	Description
Spoilage and Nutrient Loss	Degradation of amino acids, lipids, and vitamins by microbial enzymes.
Mycotoxin Contamination	Production of aflatoxins, fumonisins, and zearalenone in moldy feed.
Livestock Health Risks	Immunosuppression, organ damage, reproductive disorders.
Reduced Performance	Decreased feed conversion ratios and weight gain in livestock.
Economic Losses	Higher veterinary costs, reduced productivity, feed recalls, and waste.

Safe Moisture Thresholds for Various Feed Types

Feed Type	Recommended Moisture Content
Cereal Grains	≤ 13–14%
Pelleted/Compound Feeds	≤ 12%
Silage and Fermented	Controlled via fermentation

These limits are designed to restrict microbial proliferation while preserving palatability and digestibility.

Strategies for Moisture and Water Activity Control

To maintain hygienic conditions and inhibit microbial growth, the following measures are recommended:

Drying Procedures: Utilize appropriate post-harvest and in-process drying techniques.

Monitoring Protocols: Implement regular testing for both moisture content and a_a at all stages—raw materials, intermediates, and finished products.

Optimized Storage: Ensure feed is stored in clean, dry, temperature-regulated environments.

Preservatives: Employ antifungal agents, mold inhibitors, or organic acids to extend shelf-life.

Moisture-Resistant Packaging: Prevent external moisture ingress during handling and transport.

GMP Compliance: Regular sanitation and equipment maintenance to minimize cross-contamination.

Conclusion

Moisture is not merely a processing variable—it is a central determinant of **feed safety, microbial stability, and economic viability**. Elevated moisture and water activity levels promote microbial proliferation and mycotoxin synthesis, compromising feed quality and animal health. Understanding and managing moisture dynamics—particularly through the lens of water activity—offers a powerful tool for reducing microbial risks. Through targeted drying, vigilant monitoring, and stringent storage controls, stakeholders can safeguard feed hygiene, optimize animal productivity, and protect public health.

Mrs. Yamini Sripal
Assistant Manager
Technical Services

Dr. Sushant Mhatre
AGM
Techno Commercial

Dr. J Bhattacharyya
Director
Techno Commercial

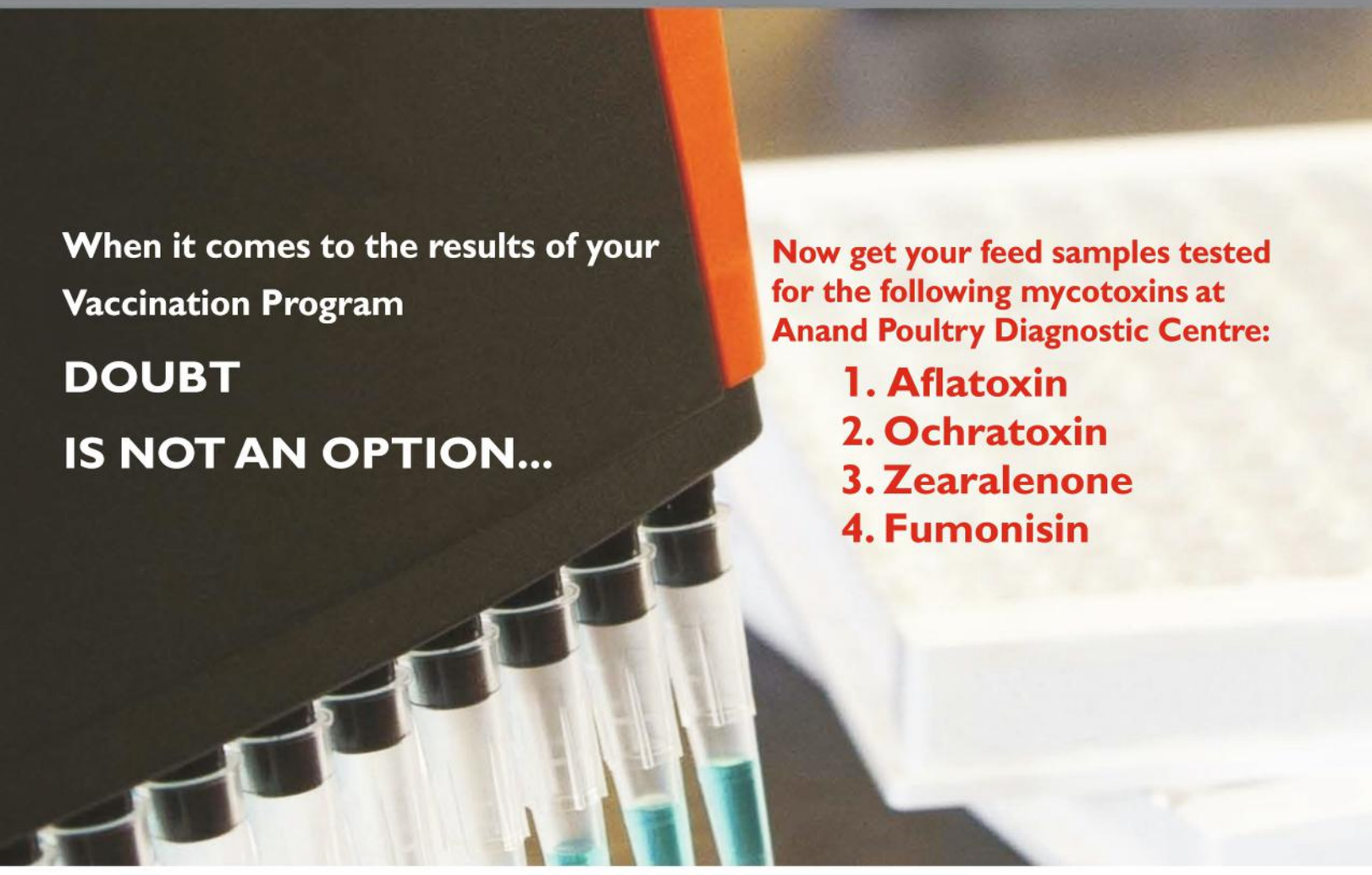
BULLETIN

सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन द्वारा मासिक मीटिंग का आयोजन

सैंट्रल हरियाणा पोल्ट्री फारमर्स ऐसोसिएशन, करनाल द्वारा दिनांक 16 जून 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 मई महीने में चिराग बजाज, नरेश मुटनेजा, सज्जन गुप्ता, पिंकल मरवाह एवं जून महीने में नीरज मलहोत्रा, विकास अरोड़ा, प्रमोद गुप्ता, युवराज वर्मा को सम्मानित किया।



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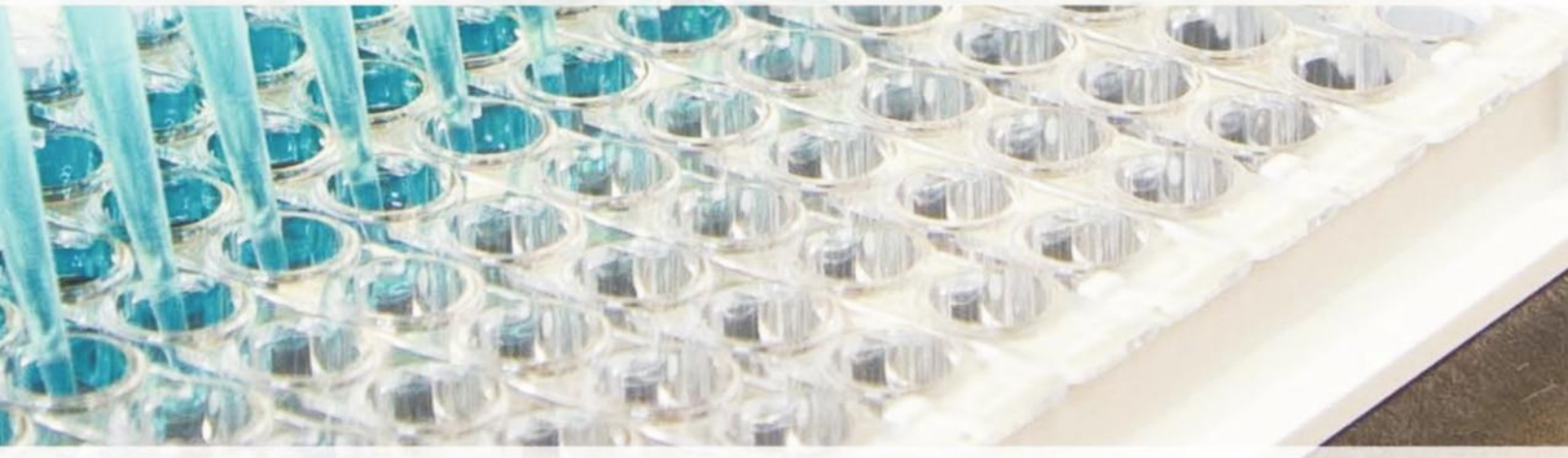

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PVS GROUP STRENGTHENS GLOBAL PARTNERSHIPS: A Heartfelt Visit to Vietnam

Building Bonds Beyond Business in Animal Healthcare

In the ever-evolving landscape of animal healthcare, strong partnerships remain the foundation of sustainable growth and innovation. This was reaffirmed during the recent visit of the PVS Group delegation to Vietnam — a visit that turned into a celebration of collaboration, trust, and mutual vision.

Our Chairman & Managing Director- DR PVS, accompanied by Dr. Ajit Jadhav, made a strategic trip to Vietnam to personally engage with one of our most esteemed partners and distributors in the region. Far from being a routine business meeting, the visit became a profound exchange of ideas, values, and shared aspirations.

The hospitality extended by our Vietnamese partner and his dedicated team was both gracious and deeply touching. The warm welcome served as a testament to the enduring relationship PVS Group has cultivated in the region over the years — one built not just on commercial success, but on mutual respect, transparency, and aligned goals.

During the visit, several key discussions took place, focusing on our **business strategy for 2025**, **upcoming innovative product launches**, and the collaborative pathways for mutual growth in the dynamic animal healthcare sector. The spotlight was on PVS Group's **R&D-driven product portfolio**, which continues to set new benchmarks in veterinary healthcare across global markets.

"This visit was not only about reinforcing business ties but also about acknowledging the trust and commitment that binds us," said our CMD-DR PVS. "The interactions were rich, purposeful, and filled with possibilities for the future. It's moments like these that truly reflect the spirit of the PVS Group — partnerships with heart."

The shared dialogue revolved around deepening market presence, co-developing localized strategies, and exploring new avenues to serve the veterinary community and animal farmers in Vietnam more effectively. The synergies discussed are expected to translate into robust growth initiatives and tailored solutions for the regional market.

At PVS Group, we firmly believe that **relationships are the true currency of business**, and our Vietnam visit served as a powerful reminder of this philosophy. Client loyalty and support, as witnessed during this visit, continue to motivate us to pursue excellence and deliver **world-class animal healthcare solutions with passion, integrity, and purpose**.

As we look to the future, such collaborations reaffirm our vision — to be a global leader in animal healthcare, guided by science, inspired by trust, and driven by meaningful partnerships.

About PVS Group

PVS Group is a leading global player in the field of animal healthcare, known for its innovation-driven solutions and customer-first approach. With a robust presence across multiple continents, the group is committed to improving animal lives through scientifically advanced, high-quality veterinary products.

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PVS GROUP Hosts Landmark Vet Meet 2025:
Launches Game-Changing Products METABO VET & CALCYBALLS

PVS GROUP marked a significant milestone in its commitment to advancing animal healthcare with the successful hosting of the **PVS Veterinary Dealers Meet 2025**. The event welcomed over **100 esteemed distributors** and **40 experienced veterinarians** from **Andhra Pradesh and Telangana**, coming together for a day of collaborative learning, product innovation, and future-focused discussions on livestock wellness.

Held in an atmosphere brimming with enthusiasm and professional exchange, the highlight of the event was the grand **launch of two pioneering veterinary products** developed by PVS GROUP:

- **METABO VET** – A specially formulated metabolic enhancer aimed at boosting recovery and improving energy metabolism in large animals such as cattle.
- **CALCYBALLS** – A high-impact calcium supplement designed for **cows, buffaloes, sheep, and goats**, targeting efficient calcium absorption and improved bone health.

Both products were met with **tremendous appreciation and confidence** from the attending veterinarians, affirming PVS GROUP's reputation for excellence and innovation in the field of veterinary healthcare.

"Veterinary health is a cornerstone of agricultural sustainability, and this meet reaffirms our dedication to equipping professionals with solutions that truly make a difference," said a senior spokesperson from PVS GROUP-DR PVS. "The response to METABO VET and CALCYBALLS has been incredible, and we are proud to support the animal health community with products that reflect quality and research."

The event also included interactive sessions, expert talks, and live feedback from practitioners, creating a space for meaningful dialogue on emerging challenges and the latest advancements in veterinary science.

As the curtains closed on this vibrant gathering, one thing was clear – PVS GROUP continues to lead with **innovation, integrity, and impact**, fostering stronger partnerships with those who share its vision of a **healthier, more resilient livestock ecosystem**.

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Novel Ways to Improve Gut Health and Nutrient Absorption Technical session organized by Venky's India Limited

Venky's India Limited Organized Technical Seminars in second week of April at Kochi (7th April), Raipur (9th April), Varanasi (10th April) and Lucknow (11th April). Dr. Christian Luckstadt (Technical Director Feed ADDCON), expert in animal nutrition from Germany was the guest speaker. The theme of the seminars was "**Novel Ways to Improve Gut Health and Nutrient Absorption.**" Dr. Prasad Kulkarni, Incharge South Asia Feeds ADDCON was technical support in all the Seminars.

Dr. Christian began his talk by emphasizing the importance of gut health in poultry performance. He also demonstrated how the microbiome develops in the gut and its relevance. AGP's negative consequences on human and animal health have been explained. Furthermore, he discussed the role of acids in poultry, with a focus on sodium diformates.

Dr. Christian subsequently showed other efficacy studies of **Acidomix® DF plus** on layer and broiler birds conducted in multiple countries, including India. Acidomix DF Plus has an important role in lowering faecal pathogenic microbiota count, resulting in improved performance and reduced antibiotic use. Many investigations have demonstrated that lowering the faecal count of coliform bacteria reduces the danger of cross-infection and improve flock performance. Other broiler trials have demonstrated significant improvements in gut morphology. **Acidomix® DF plus** enhances nutrient digestion, resulting in enhanced egg quality and a lower number of damaged eggs. Dr. Christian articulated gut eubiosis and its correlation with intestinal immunity which becomes indispensible need for the bird heath today.

He closed his session by stating that gut health and high performance can be obtained without AGPs and with gut acidification with perfect gut acidifier like **Acidomix® DF plus** which can reach the small intestine at maximum concentration.

Following his presentation, Dr. Vishwas Sagajkar (Deputy General Manager sales and marketing) and Dr. Akhil (Technical Manager) translated and explained the concepts in their respective states' native languages, Hindi and Malayalam.

Along with this in Raipur, Dr. Sunil Nadgauda (Deputy General Manager-Technical) has described about Biosecurity solution for current disease challenges.

In Kochi, Dr. N. Baburaj (Deputy General Manager-South zone) has stressed upon vaccination in current disease challenges like LPAI.

All of the seminars were attended by field veterinarians, broiler breeders, integrators, and layer farmers. Dr. Vishwas Sagajkar gave an introductory session about the novel concept and speaker in Raipur, while in Kochi. Mr. Shaji Huda (Zonal Manager) greeted everyone. In Varanasi and Lucknow, Mr. H.S. Padda (Deputy General Manager, North Zone) introduced and addressed everyone. Mr. Shashi Bhushan Kumar (Assistant General Manager, North Zone), Dr. Rakesh Yadav (Zonal Manager), Dr. Binay Yadav, Mr. Sushil Singh, Mr. Bhupendra Singh, and Mr. Shivam Singh, Mr. Abhishek Gupte (Zonal Manager Sales Central Zone) and Ashutosh Singh (Raipur), while Mr. G. Chinnaraj (AGM Sales), Mr. Shaji Huda (Zonal Manager), Mr. Sachin P, Mr. Ajay K, and Dr. Akhil R in Kochi made the necessary arrangements.

In Kochi, seminar was conducted in Hotel Port Muziris. Mr. Shaji Huda (Zonal Manager) conducted introductory session. All the arrangements were done by Mr. G. Chinnaraj (AGM, Sales), Mr. Sachin P, Mr. Ajay K, and Dr. Akhil R.

In Raipur, Seminar was conducted in Hotel Babylon. Dr. Vishwas Sagajkar (Deputy General Manager, Marketing) gave an introductory session about the concept and speaker. All the arrangements were done by Mr. Abhishek Gupte (Zonal Manager) and Mr. Ashutosh Singh (Regional sales manager). Seminar in Raipur was guided by Mr. H. G. Murade (Deputy General Manager, Sales West and central zone).

North zone seminars were conducted at the Fern residency, Varanasi and The centrum Hotel, Lucknow. In both the places Mr. Harjit Padda (Deputy General Manager, North zone) has given introductory speech. Arrangements were done by Dr. Rakesh Yadav (Zonal Manager), Mr. Bhoopendra Singh, Dr. Binay Yadav in Varanasi and Mr. Sushil singh , Mr. Shivam Singh in Lucknow.

In the end, Dr Vishwas Sagajkar thanked everyone for attending the seminar and concluded with a positive note. The seminars were guided by Dr. Deepak Khosla, General Manager Sales and Marketing, Venky's India Limited.

The seminar received a massive response from poultry farmers, veterinarians, and consultants. In all the seminars queries from the participants were discussed in detail.

Farmers and veterinarians were happy with the novel concept and significance of gut acidification in improving performance of poultry.

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Can phytogenics have a meaningful effect in coccidiosis control?

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Coccidiosis, caused by Eimeria spp., is a major challenge in poultry production, leading to significant economic losses. Historically, control strategies have relied on chemical anticoccidials and ionophores. However, the emergence of drug-resistant Eimeria strains and consumer concerns about chemical residues necessitate alternative solutions. Phytogenics, especially tannins and saponins, offer promising natural solutions to be included in programs for coccidiosis control. More and more independent research highlights the potential of these natural compounds to enhance poultry health and productivity.

By Madalina Diaconu

Efficacy of Tannins and Saponins in Coccidiosis Control

Phytogenics are plant-derived bioactive compounds known for their antimicrobial, antioxidant, and immunomodulatory properties. Among these, tannins and saponins have shown particular promise in supporting coccidiosis control.

Figure 1

Figure 2

Figure 3.

(Figure 1,2,3) The challenge: Preventing the spread of infections and mitigating subclinicial coccidiosis before it reaches this stage.

Tannins

Tannins are polyphenolic compounds found in various plants. They exhibit strong antimicrobial activity by binding to proteins and metal ions, disrupting microbial cell membranes, and inhibiting enzymatic activity.

Anticoccidial Activity: Tannins have been shown to interfere with the life cycle of Eimeria. Studies demonstrate that tannins can reduce oocyst shedding and intestinal lesion scores in infected birds (Abbas et al., 2017).

Immune Modulation: Tannins enhance immune responses by promoting the proliferation of lymphocytes and the production of antibodies, which help in the clearance of Eimeria infections (Redondo et al., 2021).

Saponins

Saponins are glycosides with surfaactant properties, capable of lysing cell membranes of pathogens. They also stimulate immune responses, enhancing the host's ability to fight infections.

Membrane Disruption: Saponins disrupt the cell membranes of Eimeria, leading to reduced parasite viability and replication (Githiori et al., 2004).

Immune Enhancement: Saponins stimulate the production of cytokines and enhance the activity of macrophages, improving the overall immune response against coccidiosis (Zhai et al., 2014)

Independent Research Evidences Phytogenics's Role in Supporting Programs for Coccidiosis Control

Numerous studies have evaluated the efficacy of phytogenics in coccidiosis control. Here, we highlight key findings from peer-reviewed research:

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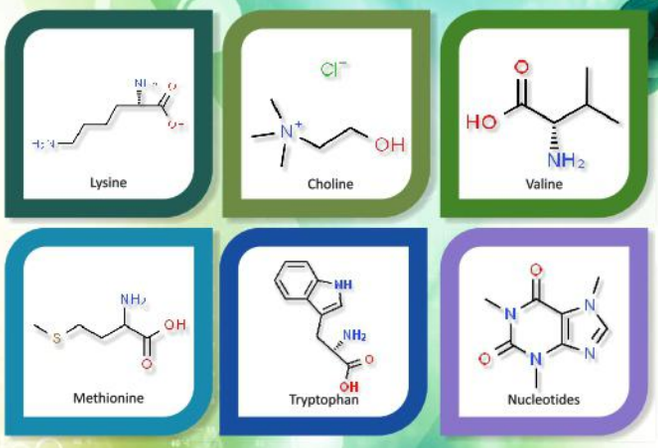

To achieve high efficiency poultry farming, a finely balanced feed formula with high bioavailability of feed nutritional fractions especially of critical ingredients including limiting amino acids, trace minerals etc., are required. To attain this balance, supplementation becomes extremely crucial to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

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

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Abbas et al. (2012): This study reviewed various botanicals and their effects on Eimeria species in poultry. The authors concluded that tannins and saponins significantly reduce oocyst shedding and lesion scores, comparable to conventional anticoccidials.

Allen et al. (1997): The authors investigated the use of dietary saponins in controlling Eimeria acervulina infections. The study found that saponin-treated birds exhibited lower oocyst counts and improved weight gain compared to untreated controls.

Masood et al. (2013): This study explored the role of natural antioxidants, including tannins, in controlling coccidiosis. The results indicated that tannins reduced oxidative stress and improved intestinal health, leading to better performance in broiler chickens.

Idris et al. (2017): The researchers assessed the potential of saponin-rich plant extracts against avian coccidiosis. The findings demonstrated significant reductions in oocyst output and lesion severity, highlighting the potential of saponins as effective anticoccidials.

Hailat et al. (2023): The researchers studied three phytogenic formulations against a control group with chemical drugs. The study concluded that phytogenic blends can be safely used as alternatives to the chemically synthesized drugs, either alone or in a shuttle program, for the control of poultry coccidiosis.

El-Shall et al. (2021): This review article highlights research findings on phytogenic compounds which showed preventive, therapeutic, or immuno-modulating effects against coccidiosis.

Despite initial skepticism, the growing body of evidence supports the efficacy of phytogenics in supporting coccidiosis control. Tannins and saponins, in particular, have shown significant potential in reducing parasite load, improving intestinal health, and enhancing immune responses. These natural compounds offer several advantages over traditional chemical treatments, including lower risk of resistance development and absence of harmful residues in meat products.

Challenges and Promises

While the efficacy of phytogenics is well-supported, challenges remain, especially with lower-quality products that may display variability in plant extract composition, in their standardization of doses, and in ensuring consistent quality. At the same time, these compounds are not silver bullets, and no producer should make unreasonable claims.

As far as the mode of action is concerned, the evidence is becoming clear: phytogenics, particularly tannins and saponins, are effective in mitigating gut health challenges and supporting bird performance when challenged. Their natural origin, coupled with potent antimicrobial and immunomodulatory properties, makes them suitable for sustainable poultry production. As the poultry industry seeks to reduce reliance on chemical drugs, phytogenics represent a viable and promising solution.

References available on request

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By Madalina Diaconu
Global Manager Gut Health, EW Nutrition

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Avitech Nutrition Hosts Life-Saving CPR and BLS Training for Team Members

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Knowledge | Nutrition | Innovation

Avitech Nutrition, amember of the Keggfarms group, recently organized a CPR (Cardiopulmonary Resuscitation) and Basic Life Support (BLS) training program for the group. Held on **June 10, 2025**, in Gurugram, the initiative aimed to empower employees with critical skills to confidently respond during medical emergencies.

The training session wasconducted by **Dr. Rajinder Saini**, a renowned first aid training instructor with extensive experience with multiple disaster management agencies.

The program was designed to provide attendees with the essential knowledge and confidence needed to act swiftly and effectively in urgent situations such as heart attacks, choking incidents, or cases of unconsciousness. Through a blend of practical demonstrations and realistic scenarios, the session made it easier for everyone to grasp the immediate actions required during a crisis.

This vital training underscores Avitech Nutrition's commitment to fostering **employee safety**, promoting **health awareness**, and contributing to overall **community well-being**.

In Memoriam

Vijay Singh Bayas (1945 – 2025)

Visionary Founder & Chairman, Vijay Raj Poultry Equipments Pvt. Ltd.
Founding Member, IPEMA & Poultry India

IPEMA

We mourn the loss of Mr. Vijay Singh Bayas, a pioneering figure in India's poultry industry and a visionary leader, who passed away on 1st June 2025 at the age of 80.

Mr. Bayas was the dynamic Founder and Chairman of **Vijay Raj Poultry Equipments Pvt. Ltd.**, a name that has become synonymous with innovation, quality, and integrity in the poultry sector. Since establishing the company in 1972, he dedicated his life to revolutionizing poultry farming in India through modernization and technology.

At a time when poultry farming in the country was largely unstructured and traditional, Mr. Bayas introduced mechanization to improve both efficiency and animal welfare. Under his visionary leadership, the company pioneered several industry-first innovations, including the **introduction of water channel systems in poultry cages (1980)**, **nipple drinkers (1984)**, and the **widely adopted "Comfort Cage" model (2001)**. These innovations set new benchmarks for the industry and are today part of standard poultry farming practices nationwide.

His relentless commitment to **research and development** and partnerships with leading agricultural universities and institutions led to the integration of **Standard Operating Procedures (SOPs)** and **Good Manufacturing Practices (GMP)** in every product line. As a result, Vijay Raj Poultry Equipments has earned the trust of poultry professionals not just in India but across **over 25 countries globally**.

Mr. Vijay Singh Bayas was one of the founding members of IPEMA and played a key role in establishing the Poultry India Expo, which has grown into South Asia's largest poultry event. The expo completed its 16th edition successfully and is now entering its 17th edition in 2025. Held annually in Hyderabad, the exhibition continues to flourish under the leadership of his son, Mr. Uday Singh Bayas — Managing Director of Vijay Raj Poultry Equipments Pvt. Ltd. — who also serves as the President of IPEMA/Poultry India.

On behalf of **IPEMA / Poultry India**, we extend our deepest condolences to the Bayas family. Mr. Vijay Singh Bayas's passing marks the end of an era. His contributions to the poultry sector, his visionary leadership, and his unwavering pursuit of excellence will continue to inspire generations to come.

His legacy lives on.

IPEMA / Poultry India Team | 7th June 2025

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Sustainable Poultry Production Through Immunomodulation in Chicken

Among all livestock species, poultry production tops in the world and poultry is reared to meet the demand of animal protein through eggs and meat at lowest prices. The producers often face several hurdles in rearing them, which depend on the utility type, the direction of use, and consumer requirements. For all these years, the aim was to increase production results, including weight gain in meat type chicken at shortest period and increase in number of eggs in layers, while trying to reduce feed intake. Besides good management and nutrition, control of infectious diseases is essential for the production of healthy poultry flocks, and this is generally achieved by extensive vaccination programs in combination with good management practices, including biosecurity measures to reduce the risk of infection.

The immunosuppression(IS) problem appears unnoticingly in almost all the flocks and it is a hidden problem in the poultry industry. Despite of all sorts of management, nutrition and disease control but actual fact indicating the scale of the problem is difficult to find. Infection with pathogens and/or environmental factors, including management errors, can result in immunosuppression, and interactions between the two usually exacerbate the problem.

The biggest losses in poultry production are reflected in reduced growth and performance of individuals, reduced egg production and shell quality, increased morbidity and mortality rates, and greater susceptibility of immunocompromised individuals to secondary infections. Effective management strategies are key to minimizing the impact of immunosuppression in poultry.

Dr. R.N. Sreenivas Gowda

What is immunosuppression?

Immunosuppression in chickens refers to a weakened or impaired immune system, making them more susceptible to diseases. This can be caused by various factors, including infectious agents like viruses, mycotoxins, and stress, often stemming from poor management practices, often these appear as sub clinical and unnoticeable.

Immune system in the Chicken

The immune system in chickens consists of primary immune organs and lymphoid tissue. The primary immune structures are 1). the **thymus**, where T lymphocytes are produced and mature; 2). the **bursa of Fabricius**, where B lymphocytes mature; and 3) . the bone marrow, where blood cell precursors are produced. In addition, during the embryonic development of chickens, the source of maternal antibodies is the yolk sec.

Primary lymphoid organs mainly act as a center for the production and maturation of adaptive immune cells. Secondary lymphoid tissues specialize in controlling immune responses. They activate immune effector cells, such as lymphocytes. After maturing in primary lymphoid organs, T and B lymphocytes re-enter the bloodstream and colonize secondary lymphoid tissues to facilitate antigen presentation to lymphoid cells and initiate and regulate the adaptive immune response.

The main difference between the immune system in mammals and chickens is the lack of encapsulated lymph nodes. Instead, there is "diffuse" lymphoid tissue and its clusters in organizations such as Peyer patches, ceacal tonsils, and Meckel's diverticulum. Lymphoid tissues include the spleen and mucosa-associated lymphoid tissues (**MALT**), also classified as the mucosal immune system (**MIS**). Lymphoid tissues in mucous membranes lining systems associated with nutrition (gut-associated lymphoid tissue—**GALT**), respiration (nasal-associated lymphoid tissue—**NALT**, bronchus-associated lymphoid tissue—**BALT**), and vision (conjunctiva-associated lymphoid tissue—**CALT).**

In chickens, these tissues are immunologically well-developed and are the first line of defense against pathogens. In about 20-wk-old chickens, the primary immune organs, that is, the bursa and thymus, are involute, and it is in the MIS that the humoral immune response occurs.

Chickens have 3 immunoglobulins (**Ig**) classes: IgA, IgM, and IgY. The chicken IgA and IgM are similar in structure to mammalian IgA and IgM. There are no analogs to mammalian IgE and IgD in chickens. IgM is associated with the primary immune response in chickens, and its monomer is a B-cell receptor.

Occurrence of immunosuppression

Immunosuppression in chickens, the weakening of their immune system, can be caused by various factors, environmental stressors, nutritional, poor management practices and infectious agents, dpecifically, viruses like Infectious Bursal Disease Virus (IBDV) and Chicken Infectious Anemia Virus (CAV) are major culprits, along with mycotoxins and other stress factors.

The chicken is more prone to immunosuppression caused by noninfectious and infectious causes:

A. Noninfectious causes

In non-infectious conditions, IS is caused by various factors including environmental stress, nutritional deficiencies, and mycotoxins. These stressors can impair the immune system's function, leading to increased susceptibility to infections.

- High density flocks
- Feed and water deprivation
- Frequent handling for weighing & vaccination handling
- Adverse environmental conditions (Cold &Heat)
- Heat stress- summer months
- Managemental errors-frequent disturbances
- Various bacterial and fungal toxins in feed

B. Infectious causes

These include various infectious agents caused by Virus, Bacteria and protozoan spps,

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a) Viral

- Infectious Bursal Disease Virus (IBDV)
- Chicken Infectious Anemia Virus (CAV)
- Marek's disease(MDV)
- Avian Leukosis Virus (ALV),
- Reticuloendotheliosis virus(RE)

They can cause apoptosis and/or necrosis of lymphoid cells and induce the malfunction of immune response regulation

b) Bacterial

- Mycoplasma (CRD)
- E.Coli
- Staphylococcus aureus (which can cause staphylococcosis).

c) Parasite

Coccidial species are a subclass of obligate intracellular protozoan parasites belonging to the apicomplexan class, among which two groups, Cryptosporidium baileyi and Eimeria species, have been linked to immuno-suppression,

Subclinical Immunosuppression:

This refers to a weakened immune system that may not show any outward signs of illness but can still make chickens more susceptible to disease.

Effects of immunosuppression:

- **Flock performance might have been substandard**: well before the producer realized there was immunosuppression in the flock;
- **Reduced growth and performance:** Immunosuppression can lead to reduced weight gain, poor feed conversion, and lower egg production;
- **Increased susceptibility to infections:** Immunosuppressed chickens are more likely to develop severe and persistent infections;
- **Increased morbidity and mortality:** Immunosuppression can result in higher rates of disease and death within a flock;
- **Secondary infections:** Weakened immune systems can be more susceptible to secondary infections, exacerbating the problem;
- **Treatments to control diseases**: might have been less effective than expected;
- **Routine vaccination programs against common diseases** might have been less effective and needed to be modified or intensified to improve protection;
- **Economic losses:** Immunosuppression can have significant economic consequences for poultry farmers, including reduced production, increased treatment costs, and higher mortality rates.

Immunomodulation

Immunomodulation refers to the alteration of the host's immune response to foreign agents and pathogens either by antibody stimulation (immune-stimulation) or inflammation suppression (immunosuppressant) in order to maintain the desired level of host immune-protection.

Objective of Immunomodulation

The preliminary objective of immunomodulation is to improve host resistance to external as well as internal attacks by the microbes or other infectious agents. The basic objectives of immunomodulation in domestic animals include:

- To trigger powerful and sustained immune response against disease causing microorganism
- To improve maturation of specific and nonspecific immunity throughout neonatal period besides insusceptible young animals.
- To augment local protective immune reactions at susceptible sites or gastro intestinal tract.
- To overcome the immunosuppressive effects of stress and environmental pollution
- To enhance duration and level of immune response following vaccination
- To maintain immune surveillance.

Immunomodulators

- These are the agents which specifically modulate immune system regulating immunity and disease resistance.
- In poultry it is specifically important as the growth, disease resistance, FCR, body weight gain production output mainly depends on the health and immunity of the chickens.

Feed nutrients and feed additives

Immune function is a complex system that requires higher concentrations of nutrients (amino acids, fatty acids, vitamins, and minerals) than those for productive traits. Besides, immunity is given first priority with regard to nutrient distribution among body functions. Protein and essential amino acids are vitally important for growth and antibody formation and a well-functioning immune system(fig.1.). This goal is achieved by supplementation with industrial amino acids such as methionine, lysine, arginine, tryptophan, and threonine to ensure adequate intake of limiting essential amino acids.

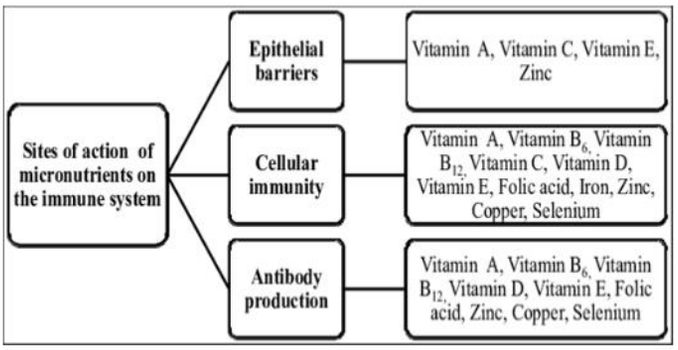

Fig ;1. Action of micronutrients on immune system

Nutritional immunomodulation: can be altered through incorporating some feed additives, such as photogenic plants, plant extract, prebiotic, probiotics, symbiotic, yeast, and enzymes, have reported immunomodulatory effects (Fig.2). It is widely recognized that beneficial microbiota—probiotics, lactic acid bacteria, and *Saccharomyces cerevisiae*, with its cell wall constituents glucan and MOS—and organic acids are necessary for immunity and gut health. The probiotic as immunomodulatory interventions show the prospect to improve Poultry tolerance to bacterial diseases such as salmonella, help detoxify aflatoxin, and decrease the hazards of nitrate.

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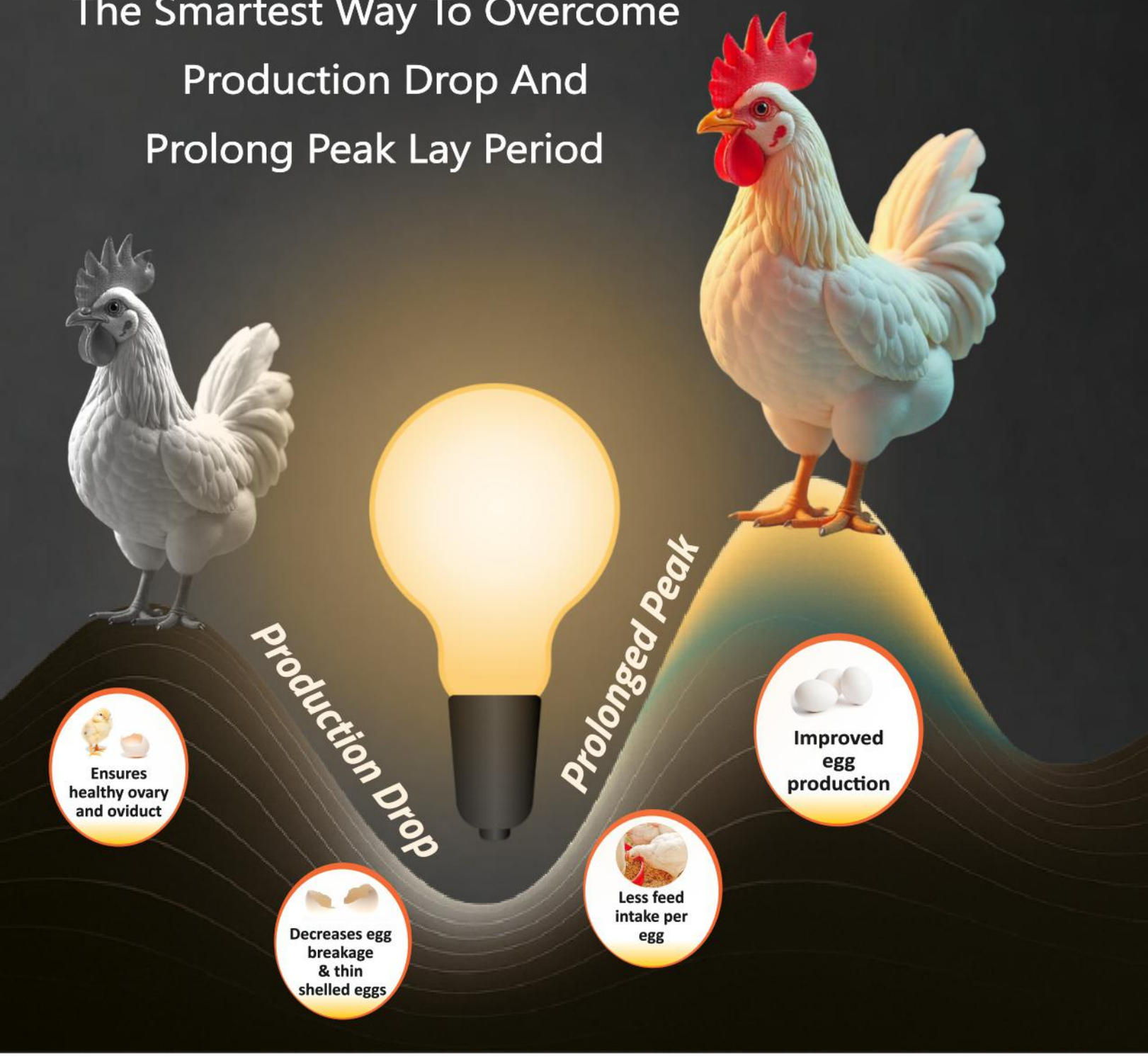

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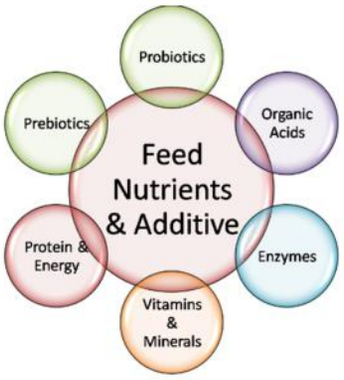

Fig 2. Feed additives in poultry production and health

Phytochemicals

Improving animal health and the GIT tract health are priorities in animal production other than reproduction. These are potential feed additives possessing multiple functions, Including anti-inflammatory, antifungal, antiviral, and antioxidative properties

Turmeric Rhizome Powder (TRP)

TRP in the diet significantly increased blood IgA, IgG, and IgM levels, and decreased the ratio of monocytes in 42dayoldbroilers given SRBCs (sheep red blood cells) . RP supplementation increased the total secondary antibody titer against SRBCs in broilers and decreased the heterophils and lymphocytes ratio (H/L) under heat stress treatment

Cinnamon: Dietary supplementation of cinnamon extracted oil or leaves has shown to decrease coliform bacteria in the jejunum and large intestine and improve growth performance in broilers

Thyme: Thyme is the name for Thymus; thymol, carvacrol, pcymeneand γterpinene are the major active components in the essential oils. Supplementation is in the form of essential oil orleaf powder. this essential oil improved cutaneous basophil hypersensitivity to phytohaemagglutinin P (PHAP) along with reducing the H/L ratio.

Essential oils (EOs): these are vital aromatic components, which are used as natural substitutes for antibiotic growth promoters(AGPs) in poultry feed. These have antimicrobial, antiviral, antifungal, antiparastic properties. Other benefits are, they act as appetite stimulant, improves enzyme secretion related to food digestion, and immune response activation

Byrates: Byrates stimulates digestive secretions (bile and mucus)while enhancing enzymatic activity In broilers, EO (essential oils) boost trypsin, amylase and jejunal chyme secretions as well as reduces the pathogens adherence (for example, E.coli and Cl. perfringens) to intestinal wall.

Conclusion

Knowledge on poultry immunity will facilitate the development of antibiotic alternative strategies to improve growth potential of poultry. Optimal combinations of various alternatives, coupled with good management and husbandry practices, will be the key to maximize performance.

Immunomodulation *is widely acknowledged as alternative therapy for a range of diseases. Restoring of sufficient immune response is a robust therapeutic strategy to combat several ailments. With regular therapies for different illnesses,* Immunomodulators *containing extract derived as bioactive components in standardised dosages might be regarded as supplemental therapy/ adjuvant therapy to increase the quality production of eggs and meat.*

Dr. R.N. Sreenivas Gowda
(Author: Former & Founder Vice Chancellor, Karnataka Veterinary, Animal And Fisheries Sciences University,(KVAFSU) Bidar, Former Director, Institute of Animal Health & Veterinary Biologicals, Bangalore, India, and Former- Professor and University Head: Dept. Of Pathology, Veterinary College, UAS, Bangalore, India)

NEWS

Namakkal Eggs Make Historic First Export to the U.S. Market

Namakkal: India's Egg Hub Meets Global Demand

Exporters from Namakkal have shipped eggs to the United States for the first time. They plan to increase shipments based on consumer feedback from the American market. Known as India's 'Egg Town,' Namakkal houses over 1,500 poultry farms that produce around 7 crore (70 million) eggs daily. Producers distribute most eggs to Kerala, Karnataka, and Puducherry and supply schools in Tamil Nadu through the noon meal scheme. Tamil Nadu ranks second in India's egg production, behind Andhra Pradesh, but leads in producing export-quality table eggs weighing 52–55 grams. The state accounts for 95% of India's table egg exports. Namakkal eggs regularly reach markets in Dubai, Bahrain, Qatar, and Oman.

Breaking Barriers: U.S. Market Opens for Namakkal Eggs

Until now, exporters could not send eggs to the U.S. due to strict trade policies, certification procedures, and quality standards. However, a recent bird flu outbreak in the U.S. caused a shortage, prompting officials to approve Namakkal eggs for export. C. Panneerselvam, president of the Tamil Nadu Egg Exporters Association, said discussions with a U.S.-based company secured export approval about 20 days ago. Since then, exporters have sent one crore (10 million) eggs in 20 air-conditioned containers from Thoothukudi port. Each egg weighs 55 grams, and the shipment is expected to arrive in the U.S. next week.

Future Growth Hinges on U.S. Consumer Feedback

Panneerselvam added that exporters will hold further negotiations based on U.S. consumer feedback. He also noted that boosting exports could help stabilise egg prices in Tamil Nadu's domestic market.

Source: The Hindu


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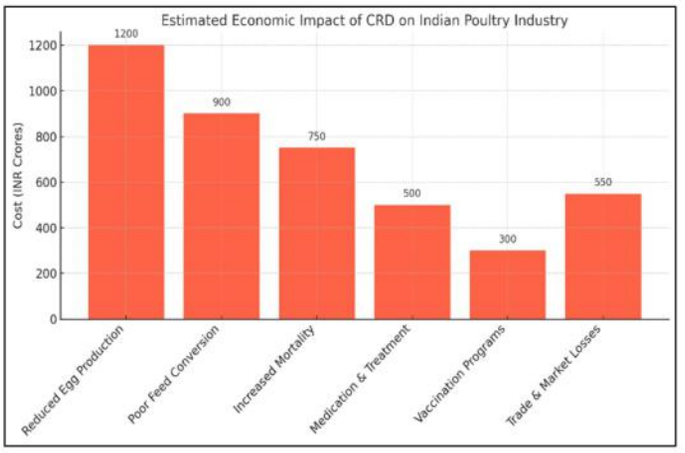
Rales of Distress:
Chronic Respiratory Disease and Its Toll on Poultry Birds & Industry

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

Dr. Kishor Gedam
Product Manager,
Stallen South Asia Pvt. Ltd.

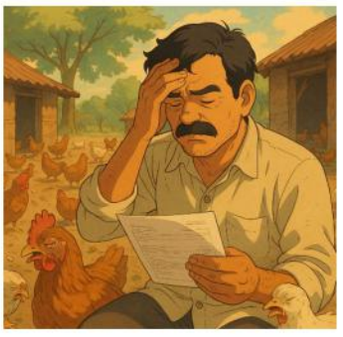
Breathing Trouble: A Glimpse into the World of CRD in Poultry

India ranks second globally in egg production and fifth in poultry meat production. The Indian poultry market, despite being one of the largest globally, remains a developing sector due to its fragmented infrastructure, inconsistent biosecurity standards, and varying degrees of modernization across regions.



A significant portion of poultry production still relies on open housing systems, limited automation, and minimal veterinary oversight, especially among smallholder and backyard farmers. These conditions foster high disease prevalence, as poor sanitation, overcrowding, and lack of structured vaccination programs create ideal environments for the spread of infectious agents like *Mycoplasma gallisepticum*, *E. coli*, and coccidia. Consequently, the industry faces substantial economic losses through reduced productivity, higher mortality, increased medication costs, and trade restrictions. Bridging the gap between traditional practices and scientific poultry management is critical for improving flock health and sustaining long-term growth.

One Breath at a Time: Poultry Farmers Battle Chronic Respiratory Disease



Before any effective fight against Chronic Respiratory Disease (CRD) can begin, the poultry industry must first understand the enemy it faces. CRD is not just another seasonal illness—it's a complex, persistent infection primarily caused by *Mycoplasma gallisepticum*, capable of silently spreading through flocks and leaving devastating economic consequences in its wake. Its symptoms often mimic those of other respiratory illnesses, making early detection a challenge. Without a clear understanding of its pathogenesis, transmission, and triggers, efforts to control CRD remain reactive and insufficient. Knowledge is the first line of defense—only with education, diagnosis, and structured prevention can farmers hope to break the cycle of recurring outbreaks. The battle against CRD must begin with awareness and be fought with science, vigilance, and unity across the industry.

Unmasking the Culprit: The Hidden Cause of CRD in Poultry

CRD is caused by *Mycoplasma gallisepticum* (MG), a wall-less bacterium that affects the respiratory tract of poultry. Secondary infections with *Escherichia coli*, *Ornithobacterium rhinotracheale*, and viral pathogens (NDV, IBV) often exacerbate disease severity.

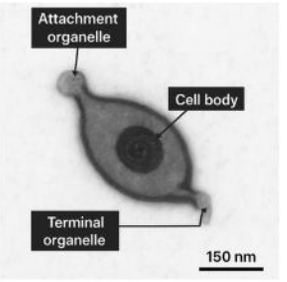


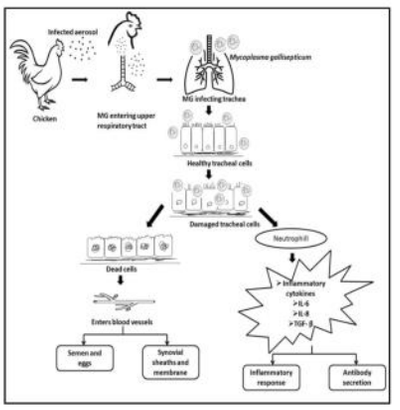
Fig. Avian mycoplasmosis; Negatively stained Mycoplasma gallisepticum.

Silent Spread: How CRD Continues to Lurk in Poultry Farms

CRD in poultry, caused by *Mycoplasma gallisepticum*, spreads through both horizontal and vertical transmission. Infected birds release the pathogen via respiratory secretions, contaminating air, water, feed, and equipment. Vertical transmission from breeder hens to chicks via eggs further fuels early infection. Recovered birds often remain silent carriers, shedding the organism under stress. This makes CRD hard to eradicate and highlights the need for strong biosecurity, breeder screening, and flock management to control its spread.

How CRD Takes Hold: Understanding the Disease's Journey in Poultry

The pathogenesis of Chronic Respiratory Disease (CRD) in poultry begins when birds inhale aerosolized *Mycoplasma gallisepticum*, the primary causative agent. The pathogen adheres to the ciliated epithelial cells lining the upper respiratory tract, disrupting the mucociliary clearance mechanism.



This allows the bacteria to colonize and multiply, triggering a chronic inflammatory response that leads to thick mucus secretion, tracheitis, and air-sacculitis. The damaged respiratory lining also becomes highly susceptible to secondary bacterial infections, particularly from *E. coli*, compounding respiratory distress and systemic illness.

In commercial poultry, stress factors such as poor ventilation, high stocking density, and concurrent viral infections (like IBV or NDV) can further exacerbate disease progression, resulting in reduced growth rates, poor feed conversion, decreased egg production, and increased mortality.

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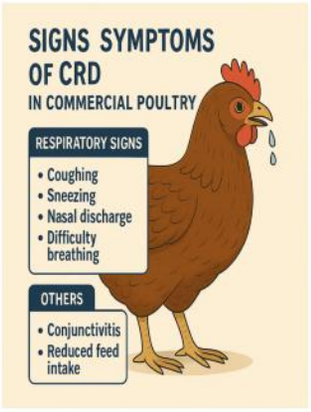
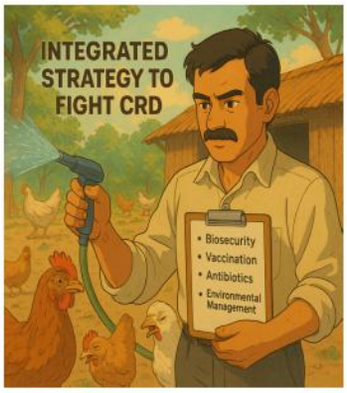
Signs & Symptoms with Postmortem (PM) Findings



CRD in poultry typically presents with a range of respiratory signs that can vary in severity based on age, immune status, and presence of co-infections. Common clinical signs include coughing, sneezing, nasal discharge, tracheal rales, conjunctivitis, reduced feed intake, stunted growth, and a noticeable drop in egg production in layers. Birds may also exhibit open-mouth breathing and watery eyes. In chronic stages, swelling of infraorbital sinuses and air-saccultitis becomes evident. On postmortem examination, the most consistent findings include thickened, cloudy air sacs (airsacculitis), catarrhal to caseous exudate in the trachea and bronchi, perihepatitis, pericarditis, and fibrinous pneumonia. In cases complicated by secondary infections like *E. coli*, lesions become more severe, showing a classic "CRD complex."



Integrated Strategy to Fight CRD

An integrated CRD control strategy combines biosecurity, vaccination, early detection, nutritional support, and precision medication.

Preventive Phase: Reducing the Latent Load

Forlutin 10% (Tiamulin 10%) a high-quality feed additive by Stallen South Asia Pvt. Ltd. serves as the cornerstone for preventive management. Administering it to growers between 7 to 14 weeks of age or just before expected stress periods such as vaccination or peak lay helps reduce the latent load of Mycoplasma. This approach prepares the flock by lowering the pathogen load before the birds reach a vulnerable stage.

Outbreak Management: When Clinical Signs Appear

At the onset of clinical signs indicative of Mycoplasmosis, immediate action is required. Stalmicosin (Tilmicosin Phosphate 250mg) oral solution – a high-quality product manufactured by Stallen South Asia Pvt. Ltd. in its own manufacturing facility to ensure the highest Quality standards, administered via drinking water at 15–20 mg/kg body weight, is highly effective due to its deep lung penetration and prolonged action. This should be continued for 3 to 5 days but not exceeded.

Following the Stalmicosin course, a 24–48hour break should be observed before beginning treatment with Forlutin 80% (Tiamulin 80%) water soluble powder. A dosage of 25–50 mg/kg body weight for another 3 to 5 days helps eliminate residual Mycoplasma and prevents recurrence. Integrating these antimicrobials into a scheduled rotation can significantly reduce disease recurrence and resistance development.

Monitoring and Biosecurity: Supporting the Antimicrobial Strategy

Surveillance using PCR and ELISA tests at regular intervals is vital to detect Mycoplasma presence, especially during and after stress periods. Swab sampling and necropsy examinations for lesions such as air sacculitis or swollen joints provide further evidence. Strict biosecurity—enforcing all-in/all-out practices, staff segregation, and regular disinfection using NADCC, quaternary ammonium compounds, or glutaraldehyde—is essential to support the medical interventions.

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PFI Delegation Visits Stallen South Asia Pvt. Ltd.

Feed Additives Manufacturing Plant in Chahade and Therapeutics / Formulations Manufacturing Unit in Vevoor (Palghar, Maharashtra)

Poultry Federation of India (PFI) team recently visited our state of the art "Feed Additives Manufacturing Facilities in **Chahade"** and "Therapeutics/Formulations Manufacturing Unit in **Vevoor** (Palghar, Maharashtra)" of Stallen South Asia Pvt. Ltd. in Palghar, Maharashtra.

The visit was aimed at gaining deeper insights into modern practices in animal health and nutrition. The distinguished delegation comprised **Mr. Ranpal (Bittu) Dhanda, President, Mr. Sanjeev Gupta, Vice President (HQ) and Mr. Ricky Thaper, Joint Secretary, Poultry Federation of India.** They were warmly welcomed by the leadership team at Stallen and taken through the facility's operations, manufacturing processes and innovation-driven initiatives.

"Stallen's Feed additives and supplement manufacturing facilities in Chahade" is recognized for its world-class infrastructure and manufacturing excellence. It specializes in a broad portfolio of feed additives and supplements for poultry and cattle, including antibacterial solutions, treatments targeting mycoplasmal infections, deworming agents, performance enhancers, anthelmintics, mineral supplements, toxin-binding formulations, antidiarrheals, growth promoters, anticoccidials, water sanitation products, fly control solutions, and disinfectants. These products are meticulously crafted and made available in various convenient forms such as tablets, boluses, powders, oral liquid solutions. The manufacturing unit is equipped with advanced machinery for formulation, granulation, liquid filling, and packaging. Rigorous quality control is implemented at every stage, from raw material testing to final product release, ensuring product consistency, safety, and compliance with global standards.

Another dedicated **"Therapeutics/Formulations Manufacturing Unit in Vevoor (Palghar, Maharashtra)"** is a crucial facility for manufacturing pharmaceutical products that range between regular therapeutic drugs as well as beta-lactam formulations. This formulation unit is equipped with state-of-the-art facilities and machinery required for the formulation and production of pharmaceutical products. This includes equipment for mixing, blending, granulation, drying, and packaging. The capacities are built for effervescent tablets, liquid form (oral and topical), oral powder, bolus and ointment. The facilities comply with Good Manufacturing Practices (GMP) and are aligned with regulatory requirements to serve both domestic and international markets. With their company products registered in over 65 countries, this milestone reinforces India's pursuit of veterinary self-sufficiency and innovation-led growth.

During the visit the delegation had good interaction with Stallen's senior leadership, including **Mr. Aniket Parikh (Director), Dr. Sanjay Singhal (Chief Operating Officer- Poultry & Cattle)** and **Mr. Davinder Kumar (Vice President -Sales, North & Central).**

Mr. Aniket Parikh, Director, Stallen South Asia Pvt. Ltd., told that Stallen company was started by his visionary father Late Shri AB Parikh in the year 1992. He added that Stallen products are now being exported to over 65 countries in North America, South America, Europe, Middle East, China, Japan, South East Asia and Australia. Mr. Davinder Kumar, Vice President Sales (North & Central) highlighted about their tie-up with FATRO, Italy and their company is marketing the entire vaccine range of FATRO in India Subcontinent. Dr. Sanjay Singhal, Chief Operating Officer (Poultry & Cattle) added that Stallen's Pharmaceutical third unit which focus on Halquinol 98%, a non-antibiotic growth promoter being manufactured as per BP 80 (British Pharmacopoeia 1980) standards in Vatva, Gujarat.

The delegation appreciated Stallen's warm hospitality, operational transparency and unwavering commitment to quality. The visit reaffirmed the vital role of companies like Stallen in driving progress within India's veterinary landscape through innovation, regulatory excellence, and responsible manufacturing.

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

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NEWS

Mycotoxins in Poultry Feed Costing Farms Over £150,000 Annually, Study Finds

New research from Queen's University Belfast has revealed that mycotoxins—harmful substances produced by fungi in crops—are quietly draining the poultry industry, with losses potentially exceeding **£150,000 (€178,000) per year** for medium-sized operations.

The study highlights the widespread impact of contaminated feed, showing that even low levels of mycotoxins can significantly reduce feed efficiency by up to **10%**, increase bird mortality, and lead to the rejection of contaminated meat and eggs. The findings mark a major concern for poultry producers facing rising feed costs and growing environmental pressures.

Professor Chris Elliott, from the School of Biological Sciences and the Institute for Global Food Security at Queen's, described the study as "extremely significant," noting that it fills a critical gap by quantifying both **economic and environmental** consequences of mycotoxin-contaminated feed in poultry meat production.

"This research shows that addressing contamination in common feed crops like wheat, maize, and soybean is vital for achieving sustainable, low-carbon, and profitable poultry farming," said Elliott.

The collaborative study, involving **DSM-Firmenich Animal Nutrition and Health**, **BOKU University in Vienna**, and the **Austrian Competence Centre for Feed and Food Quality**, also found that even **minimal contamination levels** can increase the **carbon footprint of poultry production by over 8%**. This adds to growing concerns about agriculture's role in climate change.

Co-author **Professor Rudi Krska** said the study would likely shift how the agri-food industry views low-level mycotoxin exposure. "This data is crucial for driving more sustainable production of the world's most widely consumed animal protein," he said.

Dr. Gerd Schatzmayr, head of global R&D at DSM-Firmenich, stressed the economic urgency of implementing strong, science-based risk management. "With climate volatility and supply chain disruptions rising, effective mycotoxin control is now more important than ever. It's essential for farm profitability, food security, and animal welfare."

The researchers concluded that tackling mycotoxins in feed must become a **priority** for farmers, industry leaders, and policymakers alike—ensuring poultry farming remains sustainable, safe, and economically viable in the face of growing global challenges.

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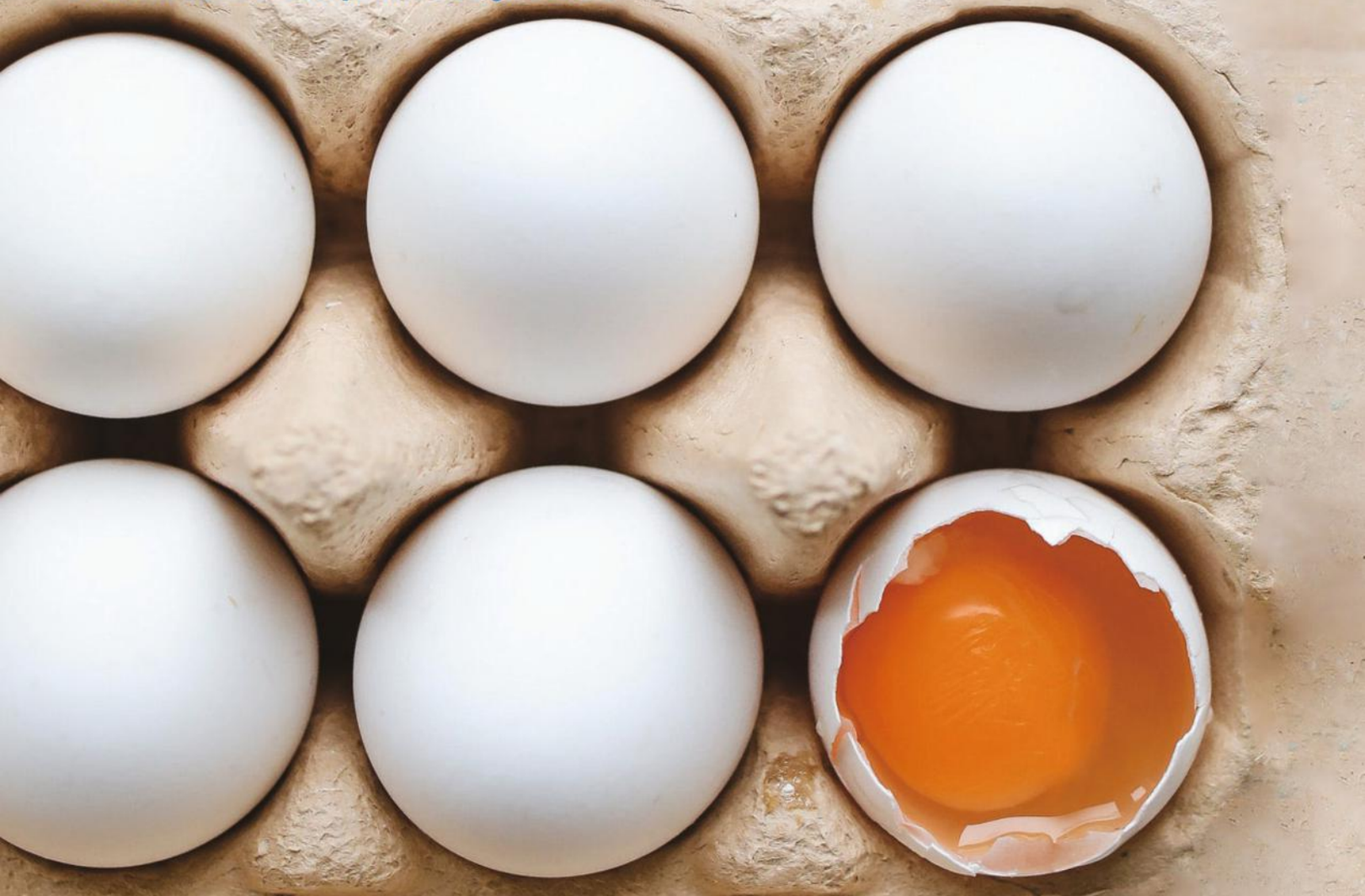

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Poultry Industry a Key Pillar of Agricultural Growth and Employment:

Haryana CM Nayab Singh Saini Assures Support as Poultry Federation Submits Memorandum

Haryana Chief Minister Sh. Nayab Singh Saini said the poultry industry is a very important and fast-growing business of India's agriculture sector. Despite low investment, limited land and resources, this business provides an opportunity for more income. Also, this industry supplies protein-rich food and is also becoming a means of livelihood for millions of people. The Haryana Chief Minister said this while chairing a meeting with the members of the Indian Poultry Federation at his residence today.

Education Minister Sh. Mahipal Dhanda, President of Indian Poultry Federation Sh. Ranpal Dhanda, Vice President Sh. Sanjeev Gupta, poultry experts and farmers associated with poultry business were present in the meeting.

The Chief Minister said that better connectivity, robust logistics and effective cold chain network is required for timely supply of poultry products. From this point of view, Haryana is the most suitable state in the country for this industry.

He said that a strong and modern network of road, rail and air connectivity has been prepared in Haryana. At least one national highway passes through every district of the state. Apart from this, the government is developing the National Capital Region (NCR) as a logistics hub, which includes 16 out of 22 districts of Haryana. This opens the doors of immense possibilities for the poultry business.

The Chief Minister said that the demand letter submitted to him by the Poultry Association will be seriously considered by holding a meeting with the officials and the rules will be simplified. He called upon the people associated with the poultry business to also follow the rules, so that the general public does not have to face any problem.

He said this industry in the state is providing direct and indirect employment to more than 3 lakh people.

He said we can strengthen this sector by giving continuous training to the farmers associated with poultry farming on topics like business management, disease control and marketing.

He said there is a serious problem of poultry waste management. Simple, cheap and effective technology is required for its disposal. There is a need to work on this area.

The country is moving towards becoming a 'Viksit Bharat' under the able guidance of Prime Minister Sh. Narendra Modi, so we have to see the poultry sector as a triple power of nutrition, innovation and export.

He said we must use our full capabilities to make the poultry industry a strong pillar of India's agriculture-based economy. This sector not only provides nutrition and employment to crores of people, but also strengthens India's global identity.

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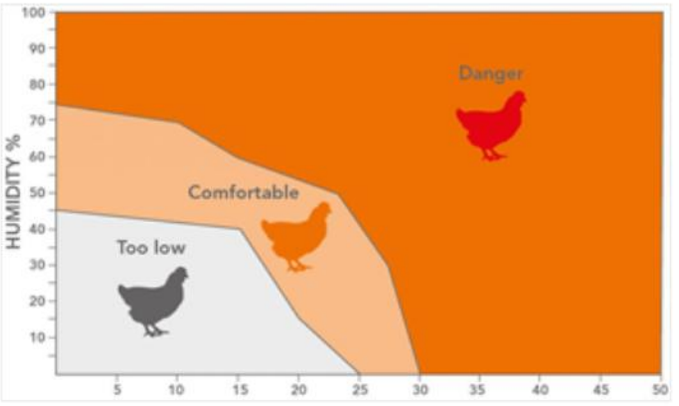
*Majority of field trials were conducted at same farm with multiple sheds in integrations across various geographical locations and at different time of the year. Some of the integrators were generous in sharing complete production indices while others communicated the summary of the trial results. In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

High Environmental Temperature & Management of Poultry Birds

Dr. Rekha Bhatt, Product Manager



Chickens are very sensitive to environmental temperature. Their growth, egg production, and health are severely affected during extremes of weather. Therefore, within the economically feasible limits, ideal temperature has to be provided to the birds, to obtain optimal growth rate and returns from the birds.

Table 1. Heat Stress & Ambient Temperature (55° to 75°F)

12.78-23.89 °C (55° to 75°F)	Thermal neutral zone. The temperature range in which the bird does not need to alter its basic metabolic rate or behaviour to maintain its body temperature.
18.33-23.89 °C (65° to 75°F)	Ideal temperature range.
23.89-29.44 °C) (75° to 85°F)	A slight reduction in feed consumption can be expected, but if nutrient intake is adequate, production efficiency is good. Egg size may be reduced and shell quality may suffer as temperature reach the top of this range.
29.44-32.22 °C (85° to 90°F)	Feed consumption falls further. Weight gains are lower. Egg size and shell quality deteriorate. Egg production usually suffers. Cooling procedures should be started before this temperature range is reached.
32.22-35 °C (90° to 95°F)	Feed consumption continues to drop. There is some danger of heat prostration among layers, especially the heavier birds and those in full production. At these temperatures, cooling procedures must be carried out.
35-37.78 °C (95° to 100°F)	Heat prostration is probable. Emergency measures may be needed. Egg production and feed consumption are severely reduced. Water consumption is very high.
>37.78 °C (Over 100°F)	Emergency measures are needed to cool birds. Survival is the concern at these temperatures.

Birds of all classes and ages suffer from heat stress, but meat birds are more susceptible than egg-type birds and this is probably, the reason why the management of broilers under high temperatures has received more attention. The effects are also more pronounced in older birds as the increase in size and insulation reduces their ability to dissipate heat compared to young bird.

Biochemical process of heat stress

Increase in Environmental Temperature

↓

Decreased Temperature Gradient between Body and Environment

↓

Decreased Rate of Sensible Heat Loss (Conduction, Convection and Radiation)

↓

Decreased rate of metabolic heat loss of body (Increment in body heat)

Two way strategy of bird

- Activation of Insensible Heat Loss Mechanism (Evaporative cooling)
- Panting (Open mouth breathing) to get rid of body heat through evaporation of body water.
- Increased gaseous exchange rate (expiration of CO_2 and O_2) and thus decrease in blood CO_2
- Maintenance of blood CO_2 concentration
- $H^+ + HCO_3 \longrightarrow H_2CO_3 \longrightarrow H_2O + CO_2$
- Respiratory alkalosis, Disturbed acid-base balance, Ionic balance (Na, K, Cl)
- Decreased carbonate ion, disturbed eggshell formation, calcium metabolism, etc.

- Decrease metabolic heat production
- Decreased feed intake and thereby decreased nutrient intake (Energy, protein, vitamins and minerals, etc.)
- Negative nutrient balance
- Mobilization of body reserves for maintenance
- Increased water intake

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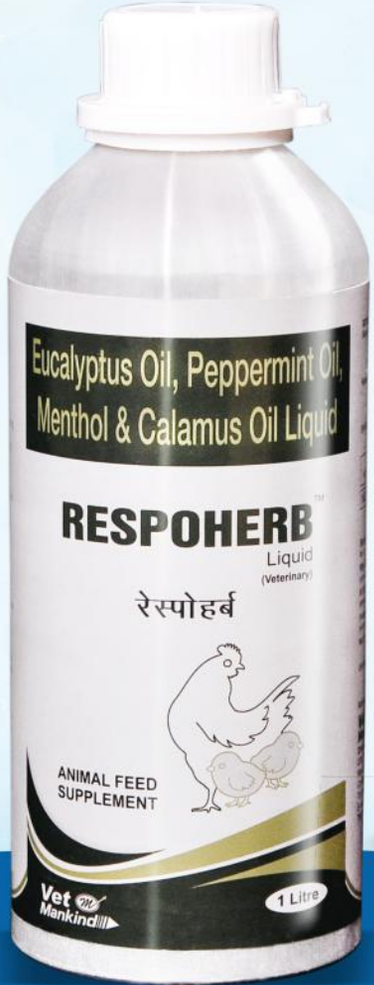

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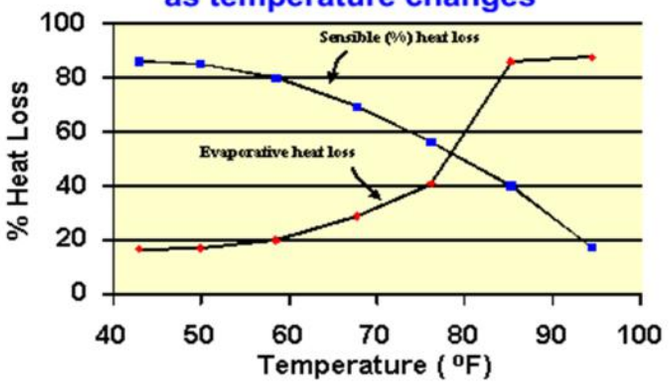
Figure 1. Method of heat loss from birds as temperature changes



Once the environmental temperature reaches approximately 77°F(25°C), the method of heat loss begins shifting from sensible to evaporative heat loss, as shown in Figure 1. Dissipation of body heat by the evaporative process requires the bird to expend energy by panting (hyperventilation), which begins to occur at about 80°F(26°C).

Signs of Summer stress in poultry

- When birds are in summer stress condition, they pant with opened mouth, spreading their wings and squatting on the brink of the bottom (Gasping, panting, spreading of wings, pale combs and wattles, closed eyes, lying down, drop by egg production, increased cannibalism and decreased appetite (Safdar and Maghami, 2014).
- Attempt to move faraway from other birds or move against cooler surfaces, like the block walls or into moving air streams. Water consumption increases and feed intake decreases. Lift their wings far away from their bodies to scale back insulation.

Adverse effects of heat stress in poultry

Various physiological and pathological changes that take place in the flock, during high summer temperatures.

- Energy intake and thereby feed consumption and other nutrient intake reduce as the environmental temperature increases. Consequently, the growth rate and body weight of birds will become lower. Also, there is reduced egg production in layers.
- There will be an early two-fold increase in the water consumption of birds during summer; because during high environmental temperatures, the major way to lose the excess heat produced in the body is by loss of water vapour through expired air.
- High ambient temperature increases the respiratory rate and body temperature. Since there are no sweat glands in Poultry, they will start panting vigorously, in order to lose the excess body heat produced. As the outside temperature increases the heat production as well as the heat loss from the body decreases.
- For every 1°C increase in ambient temperature, the heat production in the body decreases by about one percent. On the other hand, water loss through respiration increases with the increase in ambient temperature.
- High environmental temperature on the other hand decreases oxygen consumption, blood pressure, pulse rate, thyroid size and activity, blood calcium level and body weight.
- During panting, there is an increase loss of CO_2 and a decreased hydrogen ion concentration resulting in increased pH (alkalosis) according to the reaction:
- $HCO^- + H^+ \longrightarrow H_2CO_3 \longrightarrow CO_2 + H_2O$.
- The change in acid-base balance and the decreased feed intake have been reported to be the main factors responsible for poor performance of heat stressed chickens. The loss of CO_2 also reduces blood bicarbonate concentration and this is probably a major factor affecting the rate of lay and egg shell quality of heat-stressed laying hens.
- The problems with ecto-parasites will be more during summer and the following monsoon.
- The high environmental temperature associated with high relative humidity (>70%) may lead to outbreaks of Coccidiosis.
- Incidences of Fatty Liver Haemorrhagic Syndrome and other metabolic disorders like heat stroke, liver rupture etc. are more during summer; especially in case of heavy broilers.
- Birds will shed more feathers during summer, in order to lose the excess body heat produced.
- At high environmental temperatures, nearing the body temperature of the birds, vaporization of body water through respired air is the only way to lose substantial amount of heat from the body. However, this is possible only when the inspired air has very low moisture levels. But if both temperature and relative humidity are high, birds will not be able to lose the excess body heat and will finally die of heat prostration.
- Fatty birds succumb first, perhaps because their air sacs are rather constricted and thereby not able to evaporate moisture and produce coolness efficiently.

Table 2. Methods of Sensible and Latent Body Heat Loss

Heat Loss Method -	Direction of Heat Flow
SENSIBLE HEAT LOSS METHODS	
Radiation - Flow of thermal energy without the aid of a material medium between two surfaces.	All surfaces radiate heat and receive radiation back; the net radiation heat flow is from higher to lower temperature surfaces.
Conduction - Thermal energy flow through a medium or between objects in physical contact.	Direction of energy transfer depends on a temperature gradient; heat moves from areas of higher to lower temperature.
Convection - Heat flow through a fluid medium such as air; thermal energy moves by conduction between a solid surface and the layer of air next to the surface, and the thermal energy is carried away by the flow of air over the surface.	Energy transfer to the air depends on temperature and movement of air across the skin surface; heat is transferred to air moving across the skin surface if the air is at a lower temperature than the skin.
LATENT HEAT LOSS METHOD	
Evaporation - The transfer of heat when a liquid is converted to a gas; when water is converted from a liquid to a vapor, heat is utilized.	Energy transfer is influenced by the relative humidity, temperature, and air movement; heat is transferred from the animal's body to water, turning it to water vapor.

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- Caged birds and birds reared on slatted floors will suffer more due to high environmental temperature than birds reared on litter floors; because birds on litter can cool themselves to some extent by dusting themselves in the litter.
- Heavy mortality due to heat stroke will be noticed among heavy broilers, in the late afternoon and evening.
- Temperature affects egg breakage. Elevated environmental temperature is associated with a decrease in shell quality. The reduction of shell thickness produced by heat stress is apparently due to respiratory alkalosis which causes a lowering of partial pressure of carbon dioxide in the lungs and raises blood pH (Farnell et al., 2001).
- As the ambient temperature increases above 26°C, the egg size declines.
- Reduced fertility rate due to a) poor semen quality, b) Reduced mating frequency and c) Higher incidence of female infertility. Production of poor-quality chick.

Management steps that can help birds combat heat stress:

- **Water management** is crucial in heat stress management. In summer, water consumption goes up 3-4 times feed intake. So, a good quality water supply is essential. A water hygiene process must be followed because bad bacteria can prevail rapidly under poor conditions, which will lead to disease conditions. Water pipelines must be cleaned well and flushed with organic acids or hydrogen peroxide periodically. Treat water with a quality water acidifier and sanitizer. In general, try to make the water pH in acidic conditions (5.5-6). As feed intake is less during times of increased temperatures, nutritional water acidifiers should be used to help combat heat stress.
- **Housing management** can be divided into two parts, inside shed management, and outside shed management.

Outside the shed

- Thatching of the roof with green grass or agricultural waste can help reduce shed temperature. Paddy straw can be used for this purpose.
- 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.
- Allowing trees to grow near the shed to provide shade on the shed.
- Prohibit wild birds, which can carry diseases like Avian Influenza, from entering the shed.
- 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.

Inside the shed

- Use of fans
- Use of a fogger
- Provide a continuous supply of cool water (if not possible, periodically flush the water to provide cooler water for birds)
- Reduce litter thickness (ideally around 400-450 grams per square foot)
- **Feeding Management**

Research shows feed intake is reduced by 1.25% with every 1°C rise in temperature. Further, it is observed that there is a decline in feed intake by almost 5% with every degree rise in temperature from 32-38°C. Knowing this it's best practice to feed a good quality feed during times when heat stress can occur.

- Feeding should be done during the cooler hours of the morning or evening but too much gap in feeding time is not advisable.
- Increase the number of feeders and drinkers during feeding time to reduce competition among birds.
- Electrolytes and vitamins supplementations alleviates the adverse effects of HS. Supplementing the drinking water with Na , K and Cl salts were attributed to increased water consumption which facilitates heat dissipation and cools down the body (Smith and Teeter, 1988) and normalization of blood electrolyte balance. Supplementation of the drinking water with vitamins A, D, E and B complexes has been found to improve performance and immune function of broilers under HS.
- Adding antioxidants is shown to be helpful to reduce stress and improve feed consumption while maintaining or improving body weight gain. (Vitamin E, Vitamin C, Selenium).
- A high-energy diet should be provided during summer because birds lose more energy while panting.
- Energy in feed should be supplemented with oil rather than grain because fat has the lowest heat increment value compared to carbohydrates and protein.
- Feed consumption is reduced in summer. To overcome nutritional and productive losses it is suggested to supplement the diet with 10-15% more amino acids, vitamins, and minerals rather than increasing the protein level directly.
- Increase calcium and phosphorus levels to overcome thin eggshells more often seen during summer due to respiratory alkalosis (more carbon dioxide is lost due to panting).
- Instances of viral challenges increase during this time as immunosuppression is common. immunity boosters (Vitamin E, Selenium, Zinc –BIRDICARE), Vitamin C can help to reduce stress and improve the performance of the flock.
- Essential oils have a broad range of action from being immunomodulators to performance enhancers. Adding essential oils (RESPOHERB LIQUID) in the form of spray or drinking water can help mitigate respiratory challenges during summer stress and improve immunity and overall performance.
- The addition of ammonium chloride, potassium chloride, and/or sodium bicarbonate has shown improved performance in broilers by improving water quality and feed intake.
- Probiotics can be used to help control the corticosterone level and the excessive release of pro-inflammatory agents. Lactobacillus-based probiotics enhance goblet cell count in the duodenum and jejunum of heat-stressed broilers thereby improving the feed conversion ratio.
- Since a hot humid climate favors the growth of mould/fungi in feed the consistent use of an antifungal is recommended.
- **General Management**
- The depth of litter should be 2-3 inches on the floor.
- 10% extra floor space should be provided in summer. Bird overcrowding only contributed to heat stress and must be avoided.
- Shifting, transportation, debeaking, and vaccination should take place during the night or cool hours in the morning.
- Birds severely heat stressed may be dipped in cold water for 2-3 minutes to provide relief. Be sure to keep their head and neck above the water level.
- Use foggers in the shed, which can reduce the shed temperature up to 5-10°C depending on the quality of the fogger.
- The house should be situated away from other buildings to facilitate the free movement of air.

"Summer management is crucial not only to improve the performance but to gain profit in adverse conditions. So, effective use of feeding, Water, shed management brings the good health of birds and thereby profit to the farmer".

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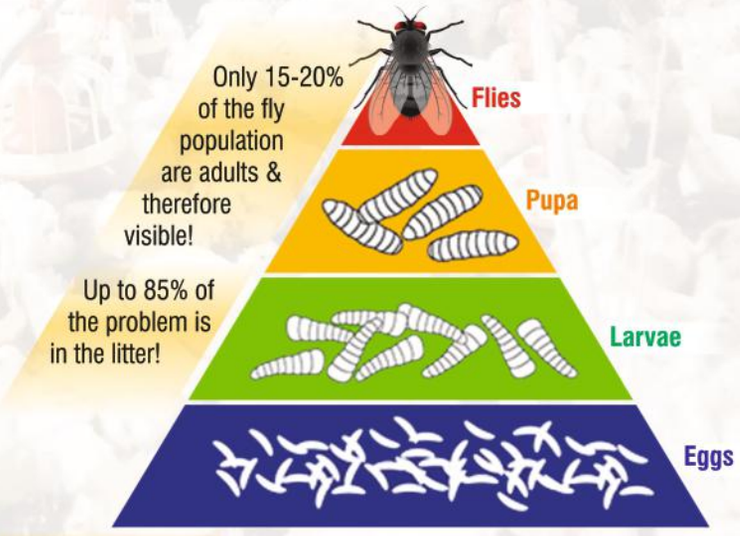

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25 million flies

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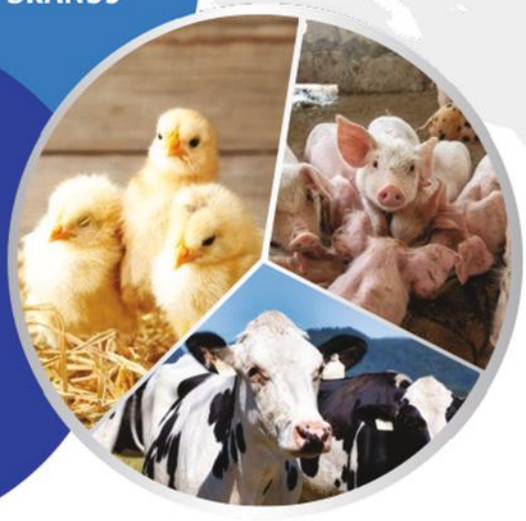

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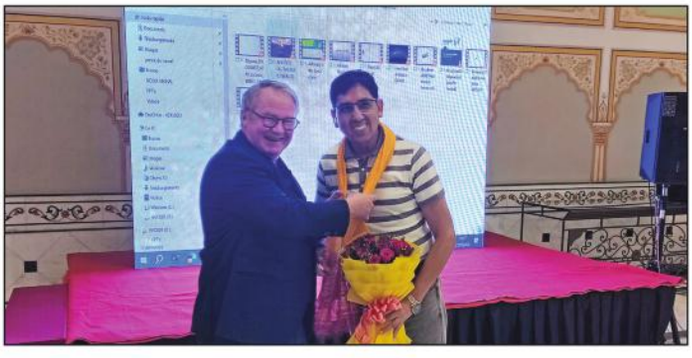
Rhodimet Day – Karnal, North India: A Resounding Success

Adisseo proudly hosted one of its most impactful Rhodimet Day events in Karnal, North India, bringing together top poultry producers, technical consultants, and major industry associations. This event highlighted Adisseo's commitment to collaboration, innovation, and advancement in animal nutrition across the region.

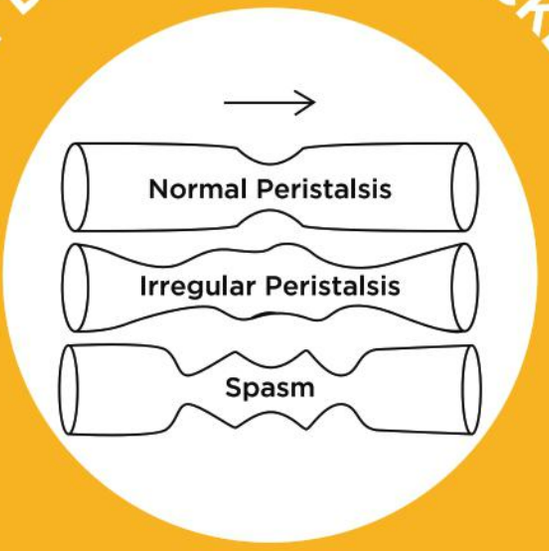
The presence of renowned poultry consultants Dr. S.K. Bhardwaj and Dr. Rakesh Sikri added immense credibility to the discussions, bridging practical field-level challenges with evidence-based solutions. Their insights resonated deeply with the audience, reinforcing Adisseo's role as a technical leader.




We were also honored to welcome active participation from the Poultry Federation of India and the Breeders Association, showcasing the collective vision toward sustainable and efficient poultry nutrition.

WET DROPPINGS IN CHICKEN?



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Keynote Speakers

Dr. Pascal Thiery

Technical Director, IMEA region, Adisseo

Dr. Thiery's presentation during Rhodimet Day in Karnal was a highlight of the event,

offering attendees a comprehensive look at the technical advantages and real-worldperformance of Rhodimet® AT88. Known for his clarity, insight, and technical rigor, he has been instrumental in shaping how feed mills across the globe apply methionine solutions efficiently and sustainably.

His collaborative work with international stakeholders, along with his deep understanding of feed formulation, process technology, and nutrient economics, makes him a respected authority and a central figure in Adisseo's customer-centric innovation strategy.

Rhodimet® AT88 – OH-METHIONINE: A 100% EFFICIENT SOURCE OF METHIONINE

Rhodimet® AT88 is a source of methionine with a concentration of active molecule (HMTBa) at min 88%, with benefits for animals and feed millers.

- A quality source of methionine for an optimized feed diet
- An easy-to-use source of methionine with practical benefits in the feed mill
- A source of methionine that comes with support & services

Key benefits

Benefits at feed formulation

We have recommendations of feed formulation matrix values for Rhodimet® AT88 on crude protein equivalence, energy values, activity, ABC-4 value for optimal use and value for the feed miller.

Practical advantages in feed production

With Rhodimet® AT88 being under a liquid form, there is no dust. This product is automatically dosed and distributed in feed, so there is no need to load product by workers that can save time and they are not exposed to product.

Support & services inside

You can count on Adisseo leadership in sources of methionine, a reliable and agile supplier with two industrial platforms. Adisseo proposes services, support, knowledge and know- how to share on nutrition, product application, sustainability

For the past 35 years, Adisseo has built strong experience around application of Rhodimet AT88. With partners specialized in liquid equipment, Adisseo has developed a range of

reliable, safe and accurate liquid spraying systems adapted to customers' needs. We also offer a service called DIM for feed mills to help them switch from powder to liquid OH- methionine with peace of mind.

El Mehdi El Ouahli

Global Solution Application Manager, Adisseo

With more than 23 years in the flour and feed milling industries, El Mehdi El Ouahli brings a unique blend of technical knowledge and operational insight.

Currently part of Adisseo's Research & Innovation department, Mehdi leads the development of field-level solutions and services aimed at maximizing the efficiency of additive application.

The event kicked off with a warm welcome from Dr. Prashant Awarede, our Area Technical Manager, setting the stage for an engaging and productive evening. We wrapped things up with a sincere thank you from **Mr. Gurdeep Singh, Sales Manager – North India,** who

appreciated everyone's time and contributions. The night ended on a relaxed note with a

networking dinner, where conversations flowed and connections were strengthened

About Adisseo

Adisseo is a global leader in feed additives, with 5 research centers, production sites across Europe, the USA, China, and Thailand, and over 3,000 employees. It serves approximately 4,200 customers in more than 110 countries.

In 2024, Adisseo achieved a turnover of €2.05 billion and continues to be a strategic subsidiary of China National BlueStar. Adisseo is listed on the Shanghai Stock Exchange since 2015.

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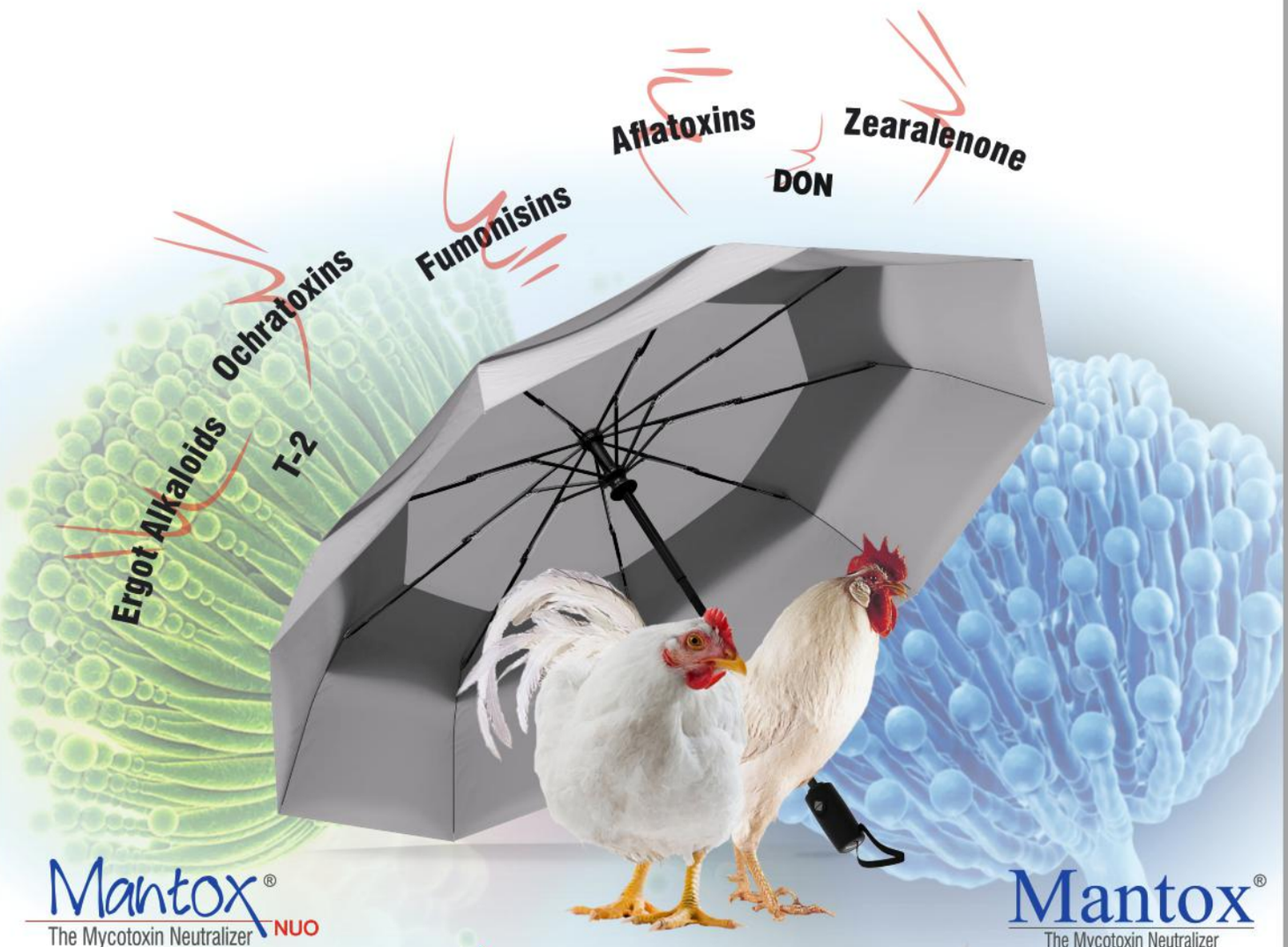

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* Fouad et al., 2012

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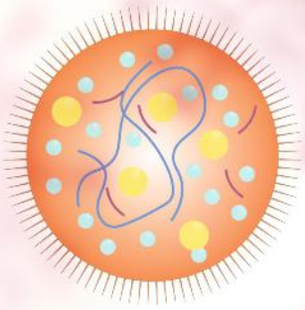

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An Effective Strategy to Control Necrotic Enteritis in Monsoon Season

Dr. Ashok Rajguru, Program Manager – Gut Health, Trouw Nutrition South Asia

Necrotic enteritis is one of the most prevalent poultry diseases globally as well as in the India also. Necrotic enteritis incidences are depending on the season and weather condition. NE cases increase during rainy season due to higher relative humidity in broiler shed which leads to wet litter condition. This necrotic enteritis causes significant challenges in broiler production specially in monsoon season. It will impact both profitability and poultry health. Necrotic Enteritis (NE) is a major concern, causing substantial production losses and compromising bird welfare. Necrotic Enteritis caused by Clostridium perfringens which is a prevalent enteric bacterial disease in broilers leading to high mortality rates, reduced growth, and poor feed efficiency. Even in its subclinical form, NE can significantly impair feed efficiency without showing clinical symptoms. Given the economic implications and consumer demand for antibiotic-free chicken, controlling NE becomes a challenge for poultry producers.

Mechanism of Necrotic enteritis (NE) in Broiler:

NE can arise when a pathogenic strain of C. perfringens invades, colonises the gut, and then increases in abundance and produces toxin(s) that damages the gut epithelial layer, thus compromising gut integrity and function. (figure no 1).

Alternative approach for Necrotic enteritis (NE)control:

There are three strategies to control necrotic enteritis

1) Management practices- good farm management practices like comfortable temp. (26-30°C), better litter conditions, good quality water supply, proper stocking density, biosecurity helps for reducing impacts of NE.
2) Vaccination-many experimental vaccines of NE reported but having limited efficacy.

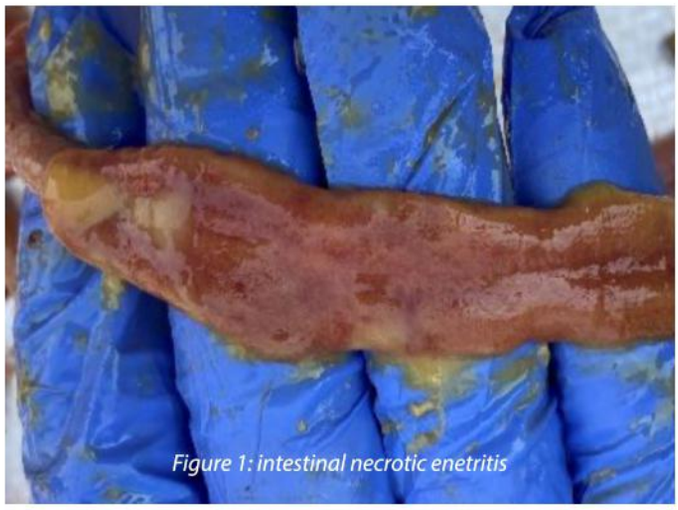


Figure 1: intestinal necrotic enetritis

3) Feed additives- in market many products are available such as Organic acids, prebiotics, probiotics, postbiotic and phytogenic products.

Organic acids, including short-chain fatty acids (SCFA) and medium-chain fatty acids (MCFA), have long been recognized for their antimicrobial effects and ability to promote gut health. Research conducted by Trouw Nutrition investigated the efficacy of blends of organic acids as alternatives to control NE and antibiotic growth promoters (AGP) in broiler production. The findings revealed that a combination of SCFA and MCFA effectively controls both gram-negative and gram-positive bacteria in feed, including the pathogen responsible for Necrotic Enteritis.

Table no.1 experiment design on Ross 308 male chicks for 35 days.

Trial Group	Feed Treatment		Challenge	
	AGP group	Selacid GG MP	Eimeria antigen*	Clostridium perfringens**
Non-Challenge Control	-	-		-
Negative Control	-	-	Day 9	Day 14
Positive Control	BMD* 50 gm/t	-	Day 9	Day 14
Selacid GG MP	-	Pre Starter 2kg/MT, Starter 1.5 kg/MT & Finisher 1 kg/MT		

*BMD: Bacitracin Methylene Disalicylate

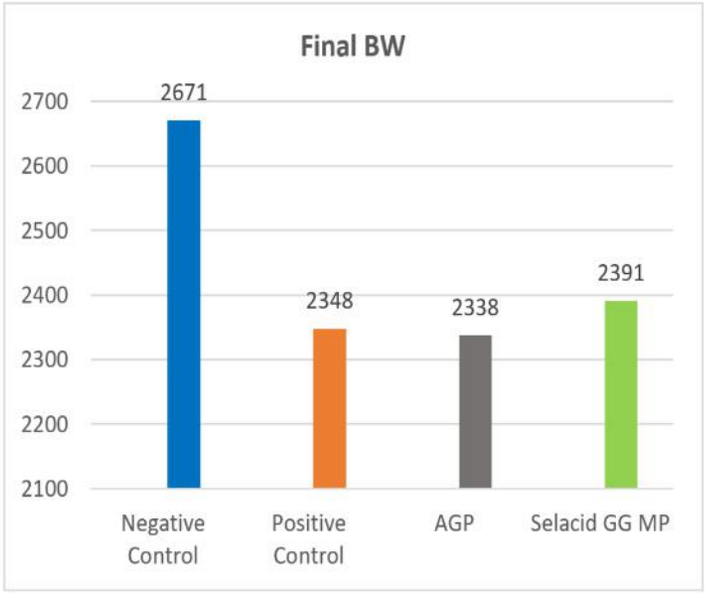
*oral one-off-dose of 1 ml field strains of Eimeria spp. oocysts (5,000 oocysts of E. acervulina, 5000 of E. maxima, 2,500 E. brunetti)

** oral administration of 1 ml of Clostridium perfringens NE18 grown to 1×10^8 CFU/ml

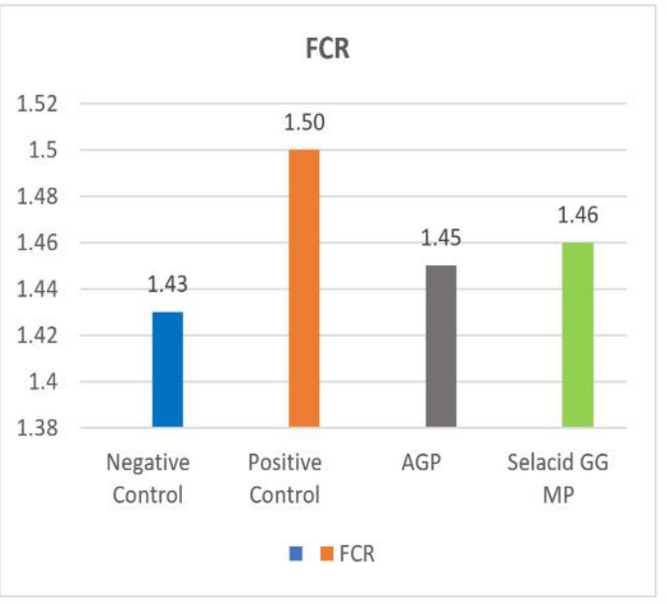
Selacid GG MP, developed by Trouw Nutrition, emerges as a comprehensive solution for enhancing gut health and combating enteric diseases in broilers. This formulation contains blends of free and buffered SCFA and MCFA, which control bacterial contamination in feed and act as potent antibacterials within the gut. By maintaining a healthy gut environment, Selacid GG MP supports optimal digestion and nutrient absorption, thereby enhancing performance even under disease challenges. Studies comparing the efficacy of Selacid GG MP with AGP Zinc bacitracin demonstrated promising results in terms of improved growth performance and broiler health during gut health challenges. These findings underscore the efficacy of organic acids in reducing mortality and mitigating the incidence of Necrotic Enteritis in broilers.

Trouw Nutrition conducted NE challenged validation trials on male Ross 308 broilers. Trial was conducted for 35 days.

Final Birds performance at 35 days: Graph 1 & 2



Graph no 1



Graph no. 2

Conclusion

In monsoon season, high prevalence of NE negatively affects economic of the farmers. Some of the feed additives demonstrated effective tools for reducing NE incidence such as organic acids. Organic acids emerge as a viable solution for managing enteric diseases like Necrotic Enteritis. **Selacid GG MP**, with its potent blend of SCFA and MCFA, offers a proven strategy for reducing bacterial infections, improving gut health, and enhancing overall poultry performance. By leveraging the antimicrobial properties of organic acids, poultry producers can mitigate the economic impact of enteric diseases especially necrotic enteritis and meet the growing demand for antibiotic-free chicken.

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Chicks/HH at 64 weeks	150.3	
Feed Consumption, incl. males	0-64 weeks	20-64 weeks
Per hatching egg produced	327 g	286 g
Per chick produced	382 g	334 g

BROILER PERFORMANCE		
AGE	LIVEWEIGHT	FCR
28 days	1647 g	1.27
35 days	2330 g	1.41
42 days	3028 g	1.54
49 days	3704 g	1.67
56 days	4324 g	1.80

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