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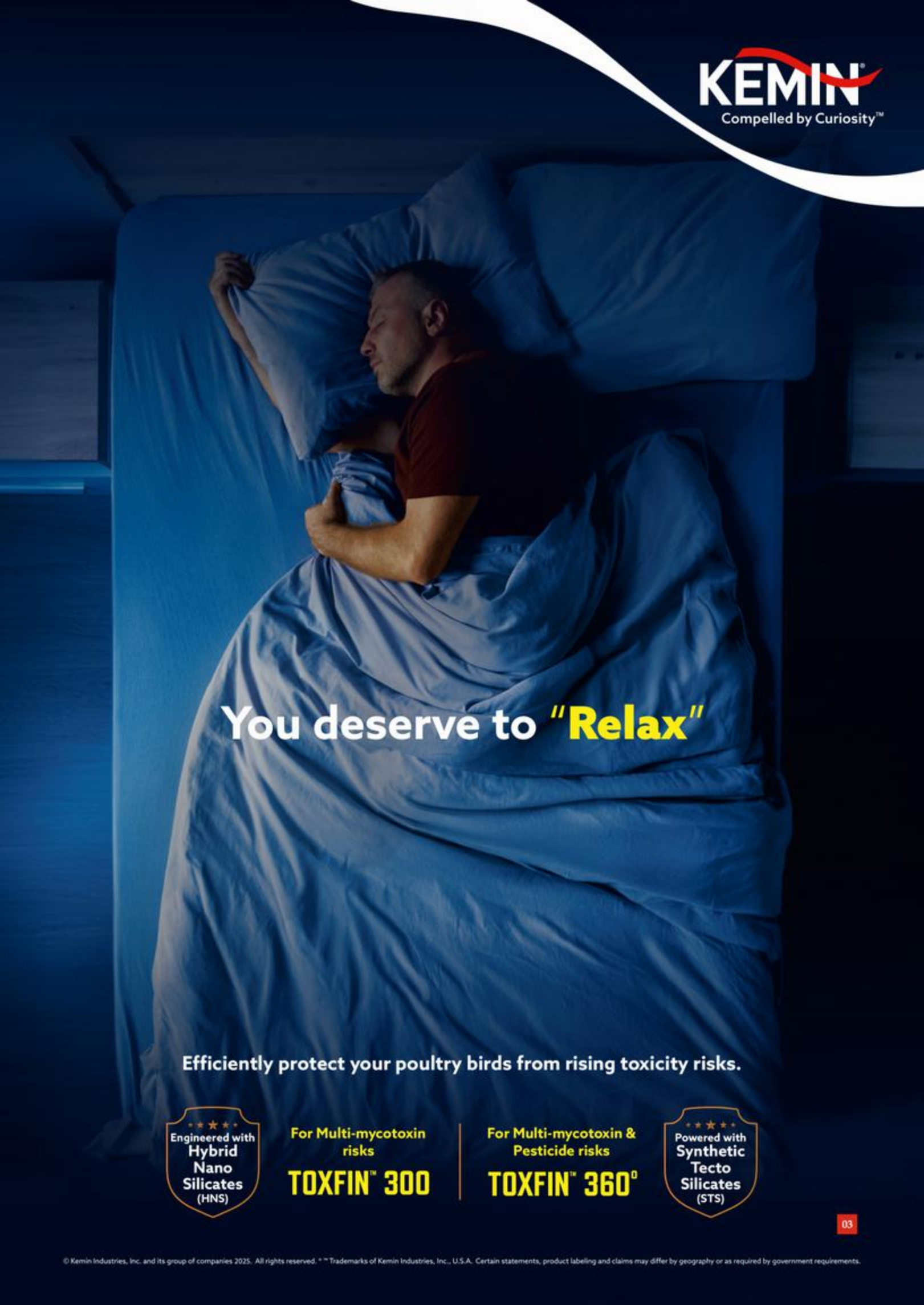

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From the Editor's Desk

Chanakya Niti!

Afghanistan's trust-based relationship with India has come of age. The Taliban's foreign minister's visit has resulted in positive developments. Access to Central Asia through Chabahar is now a possibility. It also nullifies the influence of the Gwadar Port, jointly operated by China and Pakistan.

The open Mediterranean Sea is not the private property of Turkiye. It attempted to imitate China in the South China Sea by claiming the sea to be under its control. India challenged this authority, and this has brought Turkey to its knees. While Europe challenges the power of China in the South China Sea, it acts dumb and blind when it comes to the Mediterranean. So India fights its battle alone and has been successful in wording the turkey and NATO combined. Turkey dared to support Pakistan with personnel, drones and arms against India in the recent battle. India responded by supporting Cyprus, Armenia, and Greece, which is causing immense pain to Turkey. Turkey, like Pakistan, is a blown-up balloon, empty inside with hollow claims; only a small prick is required, and it vanishes.

After a long time, Indian naval forces are flexing their arms and demonstrating the immense power at their disposal. India is a blue-water navy.

The USA and the West have come to realise the hard reality of India, which refuses to be bullied, like in the past. The courage and determination displayed by Bharat are indeed a revelation and mind-boggling to the nations of the world. The tariff war being played by President Donald Trump is a miserable failure. The opposition party in India, unfortunately, is so obsessed with the success of the ruling party that they go to any extent, including becoming Anti-national in their ideas and behaviour. The opposition leader travelling overseas is shocking the Indian diaspora by acting with the enemy.

The USA, from time to time, unilaterally declares that India has reduced or stopped buying Russian oil. But the Ministry of External Affairs, from time to time, clarifies that it is not the truth. It is a similar story when it came to the ceasefire as well. Strangely, the office of the highest level comes out with statements that are far from the truth.

The Poultry industry has gone through a very long period of slump in several decades now and is expected to crawl back gently. The recent tariff war and the disruption that it has caused have prompted people to look for ways to become more independent and also develop domestic avenues for survival and sustenance. The local poultry market is indeed a goldmine only waiting to be properly and professionally tapped. Improvements in quality, standardisation, packaging, and keeping quality with faster and better logistics will easily sustain the growth of the domestic egg and chicken market.

The recent FAIRS and shows have attracted overwhelming participation by the sponsors and visitors. The focus should not be lost on the main target, that is, the farmers who should be the actual beneficiaries and should be attracted in large numbers. This is a challenge that the organisers must focus on better.

The Chanakya Niti, which India recently followed, has focused many in the international arena. Patience, responding over time and not reacting instantly, acting with force and deterrence with a surprise element are some of the new strategies that the country is following now.

The Indian economy continues to be robust and display firm growth, despite multiple challenges from within and externally.

Incredible India continues to surprise the world!

Editor

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Address:
1325-P, Second Floor,
Sector-32, Urban Estate
Near Hotel Noor Mahal
KARNAL-132 001 (Haryana) INDIA

E-mail
poultrytechno@gmail.com
dinesh@srpublication.com

Website
www.srpublication.com

Editor:
Dinesh Kumar Arora
+91-98965-23333, 86408-23333

Associate Editor:
Sudhir Aheriya
+91-70150-26527

Circulation Incharge
Vivek Soni
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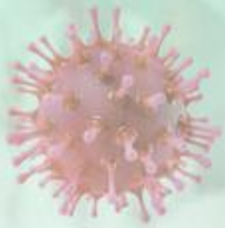

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एनकाउंटर न. 269- ब्रायलर मैनेजमेंट में ऐसा क्या है कि भिन्न-भिन्न फ्लॉक का रिजल्ट ऊपर-नीचे होता रहता है ?

मुख्य कारण किसान ब्रीडर कंपनी द्वारा दिए गए मैन्युअल को ध्यान से पढता ही नहीं। जो बदलाव होते रहते हैं और पोल्ट्री मैगजीन में छपते रहते हैं उन्हें भी पढ़ने में रुचि नहीं रखता।

दुखद है कुछ बातें जो बहुत ही महत्व की हैं हम उन पर उचित ढंग से ध्यान नहीं देते। इन मुख्य बातों का ही विवरण यहाँ दे रहा हूँ। आप स्वयं अपने तजुर्बे से जोड़ सकते हैं।

1. **बायोसिक्योरिटी** – किसी भी पोल्ट्री फार्म के लिए यह सिक्योरिटी बहुत ही महत्वपूर्ण है। बायोसिक्योरिटी का तात्पर्य यह है कि 'कोई भी बीमारी बाहर से ना आ सके और ना ही कोई बिमारी अंदर पनप सके या उत्पन्न हो'। इसके लिए हमें देखना है कि कोई भी व्यक्ति शेड के आस–पास बाहर का ना जाये, ना ही मवेशी घूमते–चरते हों। चिड़िया, चूहे आदि शेड के अंदर ना हों। जाले सदैव हटाते रहें। शेड के चारों और पूरी सफाई रखें।

- सप्ताह में एक बार ब्राड स्पेक्ट्रम अच्छे डिसइंफेक्टेंट जो बर्ड पर भी स्प्रे किया जा सके, का स्प्रे शेड के अंदर और बाहर 10–15 फुट की दूरी तक करें।
- बीमार या सुस्त बच्चे एवं लंगड़े बच्चों को अलग जाली के एन्क्लोजर में रखें – इलाज की आवश्यकता हो तो वहां करें। समस्या अधिक हो तो पूरे फ्लॉक का इलाज होगा।
- मोर्टिलिटी को शेड में ना पड़ा रहने दें। इन्हे तुरंत बाहर निकाले। आवश्यकता पड़ने पर जांच करवा कर इलाज करवाएं।
- मरे पक्षियों को बाहर इधर–उधर ना फेंके। डिस्पोजल पिट बनवाएं उसी में डालें। ऐसा ना करने पर कुत्ते, चील, कौवे इन्हे इधर–उधर ले जायेंगे और बिमारी फैलाएंगे।
- शेड मेंआप स्वयं अंदर जब भी जाएँ या पोल्ट्री मैन जब भी अंदर काम करने के लिए जाए वह रबड़ का जूता पहने हो। उसे अच्छे कीटनाशक में डुबो कर अंदर जाएँ। साथ ही हाथ भी धो लें। यही नहीं यदि सर पर टोपी हो तो और अच्छी बायोसिक्योरिटी होगी। ध्यान रहे कि सिर के बाल हवा के डस्ट और बैक्टीरिया को अच्छा शरण देते है जिसे आप स्वयं शेड के अंदर पहुंचा सकते हैं।

2. **वेक्सीनेशन** – बहुत से किसान पूरी वैक्सीन नहीं लगाते। कुछ तो ब्रायलर फार्मर इतने बहादुर हैं कि एक भी वैक्सीन नहीं लगाते। दोनों ही गलत हैं। हमें यह निम्न वैक्सीन समय से अवश्य लगाना चाहिए।

- 5–7 दिन पर **F+IB** एक बूँद आँख और एक बूँद नाक में डालें। डायुलेंट डबल लें।
- 14 दिन पर जर्जिया (गम्बोरो) एक बूँद आँख और एक बूँद नाक में डालें और डायुलेंट डबल लें।
- 21 दिन पर लसोटा पानी में पिला दें। यदि इलाके में **I.B.H.** (लीची) की बीमारी हो या होती रहती है तो इसका भी टीका 10 दिन पर लगा दें।

3. **बिछावन की हालत (LITER CONDITION)**– अक्सर किसान भाई खुश होकर अपने फ्लॉक की फोटो या वीडियो व्हाट्सप्प पर डालते हैं। वह खुश हैं तो मैं भी खुश हूँ परन्तु मेरी पहली नजर लीटर की हालत पर जाती है। दूसरी फीडर और उसके पैन में कितना दाना है फिर ड्रिंकर पर जाती है कि वहाँ कितनी भीड़ है? काश यह सब बिलकुल सही होता तो इस किसान को और अधिक ग्रोथ मिलती। यहाँ मैं सिर्फ लीटर की बात करूँगा।

- लगभग 90% में लीटर की हालत ज्यादा गंभीर मिलेगी। लीटर गीला होगा, केक बना होगा। इसका मुख्या कारण बिछावन की कमी है। आमतौर से उसकी गहराई 2" प्लस–माइनस होगी, जबकि यह 4" प्लस–माइनस तो कम से कम होना चाहिए। मौसम के हिसाब से यह घट–बढ़ सकता है।
- अच्छी ग्रोथ और अच्छे फीड रूपांतरण (**FCR**) एवं बिमारियों की रोकथाम के लिए लीटर का सदैव उचित बनाये रखना आवश्यक है। इसके लिए आपको प्रारम्भ से ही नया बिछावन हर सप्ताह मिलाते रहना चाहिए।
- सही बुरादा बनाये रखने के लिए आपको प्रतिदिन थोड़ा सा 'पसीना' बहाना पड़ेगा। प्रतिदिन उसकी रेकिंग (गुड़ाई) करना पड़ेगा। इससे जो नमी उसमे रोज मिलती है मुख्य रूप से ड्रॉपिंग (बीट) के कारण जिसमे पानी लगभग 70% होता है हवा द्वारा कम होगा। रेकिंग का काम हमारे किसान भाई शायद सप्ताह में एक या गलती से दो बार करते हैं, यह रोज करना चाहिए। कभी–कभी तो दो बार भी करना पड़ सकता है, यदि लीटर की हालत ज्यादा खराब हो रही हो तो।
- लीटर को बनाये रखने में ही समझदारी है–रेकिंग से प्रतिदिन बनने वाली अमोनिया गैस भी कम होती है। इसकी अधिक मात्रा कई बिमारियों का कारण भी बन सकती है विशेष रूप से **C.R.D.**। यही नहीं वैक्सीन ने जो इम्युनिटी बनाई है उसको भी तोड़ सकती है।
- अतः लीटर को बनाये रखने में ही समझदारी है। यह कई समस्याओं का निवारण करती है और फ्लॉक बहुत अच्छा साफ सुथरा जैसे 'सर्फ से धुला हो' तैयार होगा।

4. **ब्रूडिंग एवं तापमान** – हमारे तीन अलग मौसम होने की वजह से शायद हमसे ब्रूडिंग के समय प्रायः चूक हो रही है। हम सिद्धांत एवं आवश्यकता समझ लें तो यह चूक हमसे ना हो।

- चिक्स को किस उम्र में कितना तापमान चाहिए पहले इसे समझ लें।

सप्ताह	ब्रूडर के नीचे का तापमान	कमरे का तापमान
1.	90-95°F	80-85°F
2.	85-90°F	75-80°F
3.	80-85°F	70-75°F
4.	75-80°F	65-70°F
5.	70-75°F	60-65°F
6.	65-70°F	60°F

- इसमें दो तापमान दिया गया है– एक ब्रूडर का और एक पेन का। हमे हर हाल में यह तापमान बनाये रखना है।

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

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- जाड़े में दिन और रात यह तापमान बनाये रखना है परन्तु गर्मी और बरसात में अधिकाँश आवश्यकता से अधिक तापमान रहता है। फिर भी उस समय भी आधी रात बाद किसी भी समय तापमान आवश्यकता से कम हो सकता है– भले ही सुबह के समय 3–4 घंटे के लिए नीचे जाए। यह मई–जून या किसी भी समय हो सकता है। ऐसी हालत में हमे उस समय पूरा तापमान बनाये रखने के लिए अतिरिक्त तापमान देना होगा। यह आवश्यक है। नहीं दिया तो आप टारगेट नहीं ले पाएंगे। यह काम पहले या अधिकतम दूसरे सप्ताह तक ही करना है जो बहुत ही महत्वपूर्ण है।

5. हवा का आदान प्रदान – जिस तरह पानी लगभग मुफ्त है वैसे हवा भी कुदरत ने बिलकुल मुफ्त दी है परन्तु इसका महत्व सबसे ज्यादा है। जिसकी अनदेखी विशेष रूप से जाड़ों में अधिकाँश करते हैं।

- शेड का तापमान बनाये रखने के लिए पूरे शेड को प्लास्टिक परदे से ढक देते हैं ताकि ठंडी हवा कहीं से भी अंदर ना जा सके। यह बिलकुल गलत है। ऑक्सीजन इंसान चरिंदे, परिंदे, हर जीव एवं पेड़ पौधे की आवश्यक खुराक है। इसे आप लगभग शुन्य करके कैसे चूजे पाल सकते हैं – कैसे उनकी ग्रोथ ले सकते हैं। आप शेड में बुखारी जलाते हैं जिसे जलने के लिए ऑक्सीजन चाहिए। जो थोड़ी बहुत हवा अंदर आ रही होगी तो बुखारी अपने जलने के लिए खींचेगी। चूजों को क्या मिलेगा– कार्बनडाईऑक्साइड एवं मोनोक्साइड। दोनों ही जहरीली गैस हैं। इस बात को ध्यान में रखते हुए दोनों और के पर्दे को ऊपर से 2–3" खुला छोड़ कर लगाएं। इससे प्रारम्भ के कुछ दिनों के लिए प्रयाप्त ऑक्सीजन मिल जाएगी। हाँ बुखारी एक–दो बढ़ानी पड़ सकती है। यह सोदा सस्ता है बनस्पित पहले वाले से। उम्र के साथ ऊपर का खुला भाग बढ़ाते रहना चाहिए।
- हर बुखारी के ढक्कन के ऊपर लोहे के खुले तसले में पानी रखें ताकि अंदर भाप बने। ऐसा ना करने पर बुखारी के कारण 'सूखी हवा' चूजों को मिलेगी जिस कारण उनकी सांस की नली भी सूखेगी और स्वास सम्बन्धी बिमारियों का कारण बनेगी। इसमें **C.R.D.** प्रमुख है।
- हवा का आदान प्रदान लीटर को बनाये रखने में मदद करेगा।
- अमोनिया की मात्रा भी हवा के आदान प्रदान से कम होगी।
- मौका मिलने पर दिन में पर्दा ऊपर से और खोल सकें तो बेहतर होगा।
- वास्तव में हम पर्दा ऊपर से नीचे की और लगाते हैं। अतः आवश्यकता पड़ने पर जब खोलने की बात होती है तो नीचे से उठा देते हैं जो जाड़े में गलत है। पर्दा नीचे से ऊपर जाने वाला हो तो बेहतर होगा। अगर हम यह नहीं कर सकते हैं तो पर्दे को दो भाग में लगाएं। जब भी खोलना हो ऊपर वाला खोलें।
- जब भी पर्दा खोलें तो उस और का ऊपर का आधा खोलें जिधर से हवा अंदर ना जा रही हो बाद में दूसरी और का ऊपर का पर्दा हटाएँ। इसी प्रकार तापमान को देखते हुए नीचे का पर्दा हटाएँ।

6. सही तापमान पर नियत्रण कैसे? – अधिकाँश किसान अपने तजुर्बे का इस्तेमाल करते हैं और 'अपने' को 'संतुष्ट' रखते हैं चाहे चूजे संतुष्ट हो या ना हो। जो थर्मामीटर का उपयोग करते हैं, वह उस समय का तापमान बताता है जिस समय का देखा जाता है। वास्तव में पोल्ट्री के लिए **MAX-MIN** थर्मामीटर लेना चाहिए जो उस समय का तापमान तो बताता है साथ में 24 घंटे में सबसे अधिक और सबसे कम तापमान भी बताता है। इससे आप तापमान का सही नियंत्रण कर सकते हैं।

7. हर जगह एक सा प्रकाश – प्रकाश की व्यवस्था ऐसी हो जो हर तरफ एक सी हो, यहाँ तक कि हर कोनों में भी बराबर सी लाइट हो। समानांतर ग्रोथ के लिए यह आवश्यक है।

- रोज शाम को जब लाइट जलाते हैं तो देख लें कोई बल्ब फ्यूज तो नहीं हुआ है। उसे तुरंत बदलें।
- ध्यान रहे सारे बल्ब एक ही 'वाट' के हों, कम या ज्यादा के ना हो। कोई ऊँचा या नीचे ना लगा हो – सबकी ऊंचाई एक सी हो।

8. आपकी 'देखरेख' के आंकलन का बैरोमीटर – आपने अच्छी फीड ली, अच्छा चूजा लिया– आपका मैनेजमेंट अच्छा था इसका आंकलन कैसे करें ? यह सबसे महत्वपूर्ण भाग है आपके सम्पूर्ण मैनेजमेंट का।

- इस आंकलन का एक ही 'बैरोमीटर' जो स्पष्ट आपको बता देगा। बैरोमीटर है क्या ? यह कोई थर्मामीटर नहीं, ना कोई हथियार है। आप जिसका भी ब्रायलर चिक्स लेते हैं उसका स्टैंर्डड ग्रोथ चार्ट मंगवा लें। बस अपना रिकॉर्ड सही ढंग से बनाएं। इस रिकॉर्ड में अन्य के साथ साप्ताहिक फीड की खपत और औसत वजन जरूर रिकॉर्ड करें। इनकी तुलना कंपनी द्वारा दिए गए रिकॉर्ड से करें। यदि लगभग बराबर है तो खुशी की बात है, यदि उससे अधिक है तो अधिक खुशी की बात है और आपका मैनेजमेंट बहुत अच्छा है। यदि तुलनात्मक अध्ययन में पीछे हैं तो निश्चित रूप से आपके मैनेजमेंट में कमी है। यदि इस बात को अपने पहले या दूसरे सप्ताह में पकड़ लिया तो सुधार का मौका है। देर से पकड़ा तो सुधर का मौका भी नहीं मिलेगा।
- यह सुधार कैसे लाएं। अपने मैनेजमेंट के हर बिंदु जैसे एक दिन के चूजे का औसत वजन क्या था ? तापमान बनाये रखने में आपसे गलतियां तो नहीं हुई ? प्रारम्भ में चूजों के रहने की जगह कम या बहुत ज्यादा तो नहीं थी? आपके चूजों में फफून्द रोग, एसाइटिस या **C.R.D.** जैसी बीमारी तो नहीं हुई? लीटर (बिछावन) को सूखा बनाये रखने में आप कामयाब थे या नहीं ? फीडिंग स्पेस प्रयाप्त था कि नहीं ? पीने के पानी का तापमान मौसम के हिसाब से अनुकूल था कि नहीं ? एवं सबसे बड़ी बात फीड की क्वालिटी बढ़िया है कि नहीं ? 'स्टैण्डर्ड मैनेजमेंट' के पन्नों को पलटिये आपको उत्तर मिल जायेगा–तुरंत सुधर लाएं। यहाँ मुख्य बातें तो लिख दी गयी है परन्तु छोटी–छोटी और भी बातें हैं उस पर भी अपना ध्यान आकर्षित करें।

9. मरे हुए पक्षियों का क्या करें? – वह गलती ना करें जो रामपुर या काशीपुर के कुछ किसानों ने किया। उन्होंने मरे पक्षी पडोसी के खेत में फेंक दिया– हंगामा हुआ और उस तरफ के लगभग सभी किसानों के पक्षियों की जांच हुई– 'भोंपू' मीडिया को खबर हो गयी फिर जो पूरे भारत में हुआ वह बड़ा दुखदाई था। अंडा–चिकन खाने वालों ने मुँह फेर लिया। इसलिए बार–बार कहा गया–लिखा गया कि मरे पक्षियों का डिस्पोजल सही ढंग से करें।

यह सही ढंग है क्या? साधारण है फार्म के एक कोने में एक कच्ची पिट बनाएं। इसको सीमेंट के स्लैब से ढक दें। जिसका मुँह छोटा हो – बस इसी में मरे पक्षी डालते रहें। जब यह भर जाए तो नया पिट खोद लें–स्लैब को उठा कर उस पर रख दें। इस पुराने पिट को दो फुट मिट्टी डालकर बंद कर दें।

इस लेख के मुख्य बिंदुओं पर ध्यान दें – आपको सफलता मिलनी ही चाहिए।

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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

Last review date: 09/08/2024

"Additional information is available on request."

IN-POU-0001-2025 Jan27

PREVENTION WORKS
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एनकाउंटर न. 268- जल्दबाजी में बीमारियां डिक्लेयर ना करें-क्यों ?

सन् 70 के दशक की बात है हरियाणा के एक कांग्रेस लीडर के फार्म पर सुबह–सुबह कुछ समस्या आ गयी। कल तक प्रोडक्शन बहुत अच्छा था – मोर्टिलिटी भी नहीं थी। परन्तु सुबह–सुबह 20–25 मोर्टिलिटी भी हुई एवं ढेर सारे कच्चे अंडे भी आ गए। **MP** महोदय ने डिपुटी डायरेक्टर **AH** को फोन लगाया। क्या था गुडगाँव की भारी भरकम टीम उनके फार्म पर पहुंच गयी। जिसमे मुख्य विशेषज्ञ कृषि विज्ञान केंद्र के थे जो हिसार एग्री यूनिवर्सिटी के अंतर्गत आता था।

विशेषज्ञ महोदय अब दुनिया में नहीं है इसलिए उनका नाम नहीं लिख रहा हूँ, शेड देखने के बात पोस्ट मॉर्टम किया और 'रानी खेत' बता कर तुरंत **R2B** वैक्सीनेशन की राय दी। आदत के मुताबिक **MP** साहब ने मुझे भी फोन किया था, मैं भी पहुंचा। चौधरी साहब ने मुझे देखते ही कहा आप जा कर चेक कर लें, तब तक चाय आ जायेगी।

मैं शेड में चला गया। वहां के हालत देख कर और रिपोर्ट देख कर, मैं भी घबरा गया था। सुपरवाइजर से पूछा "फीड कब आया था"? उसने बताया "7 दिन पहले"। मैंने फीड को निर्दोष माना क्योंकि कल तक उत्पादन बिलकुल सही था और लगभग पूरे सप्ताह अच्छा प्रोडक्शन था। अब मैंने पूछा "कोई दवा चल रही है क्या?" उसने बताया "सिर्फ मीठा सोडा कल शाम को और आज सुबह पानी में लगाया है"। यह भी कोई कारण नहीं हो सकता, सोचकर मेरा ध्यान 'रानी खेत' की और गया। पोस्ट मॉर्टम के लिए कोई बर्ड नहीं था और यह सोच कर **DIO** ने पोस्ट मॉर्टम कर ही लिया है– वह बताएंगे। कोई विचार नहीं था, पता नहीं कैसे मेरे मुँह से निकला "जरा मीठा सोडा दिखाना"। एक काले प्लास्टिक की थैली में मीठा सोडा आया जिसे हाथ लगाते ही कुछ गर्माहट सी महसूस हुई। मैंने कहा "यह तो कास्टिक सोडा है–कौन लाया?" पता चला फार्म का चौकीदार लाया था।

मैंने सारा पानी फिकवाया और कहा फौरन गुड़ का पानी लगाए और उसके खत्म होने के बाद VIT., AD3EC और B-COMPLEX पीने को दें। इसी प्रकार 3–4 दिन एक पानी में देते रहें।

मैं जब वहां पहुंचा जहाँ चाय चल रही थी। चौधरी साहब ने कहा "बड़ी देर लगा दी"। उन्हें बताया "पानी फिकवा रहा था, क्योंकि उसमे सोडा बाई कार्ब की जगह कास्टिक सोडा कल शाम से लग रहा था"। इस पर सभी चौंक पड़े। **DIO** साहब ने अपना पर्चा अपनी जेब में रखा और कहने लगे "2–3 दिन देख लेते है"।

पहले भी लिख चूका हूँ किसी भी समस्या के निदान के लिए कुछ दिनों की फ्लॉक हिस्ट्री लें फिर निर्णय करें। दूसरे ही दिन मोर्टिलिटी भी कम हुई और कच्चे अंडे भी कम हुए। 3–4 दिन में सब नार्मल हो गया।

Mr. Shabbir Ahmad Khan

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Mobile : 98115-08838

EVENT CALENDER

NOVEMBER 2025
25-27 NOVEMBER – VIV MEA
Venue : Adnec Center Abu Dhabi Khaleej Al Arabi Street Abu Dhabi, U.A.E.
Name : Renate Wiendels
Phone : +31 6 5133 2877
Email : Renate@vnueurope.com
Web : www.vivmea.nl

NOVEMBER 2025
26-27-28 NOVEMBER – POULTRY INDIA
Venue : HITEX Exhibition Center Hydrabad
Name : Mr. Uday Singh Bayas (President)
Ms. Radhika (SOM)
Phone : 7997994331 / 34
Email : info@poultryindia.co.in
Web : www.poultryindia.co.in

JANUARY 2026
27-29 JANUARY – IPPE
Venue : Georgia World Congress Center, 285 Andrew Young International Blvd NW
Phone : (770) 493-9401
Email : info@ippexpo.org
Web : www.ippexpo.org

MARCH 2026
10-12 MARCH – VICTAM ASIA
Venue : BITEC Exhibition Center in Bangkok, Thailand
Phone : +31 33 246 4404
Email : expo@victam.com
Web : www.victamasia.com

JUNE 2026
28-30 JUNE – MIDDLE EAST POULTRY EXPO
Venue : Riyadh, RICEC, Saud Arabia
Phone : +966542804924 / +966114824876
Email : info@mep-expo.com
Web : www.mep-expo.com

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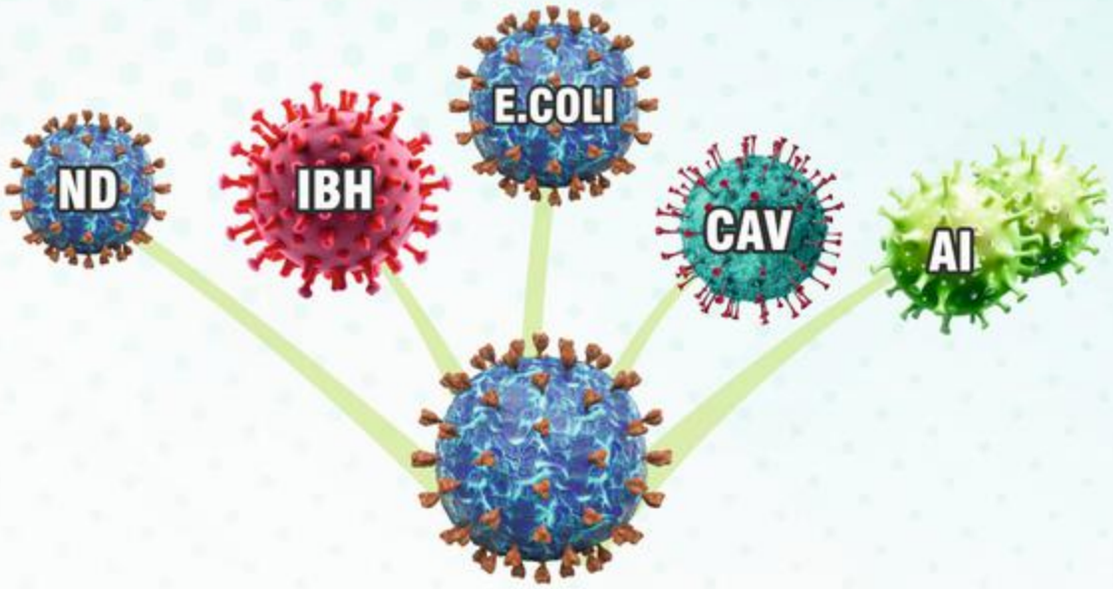

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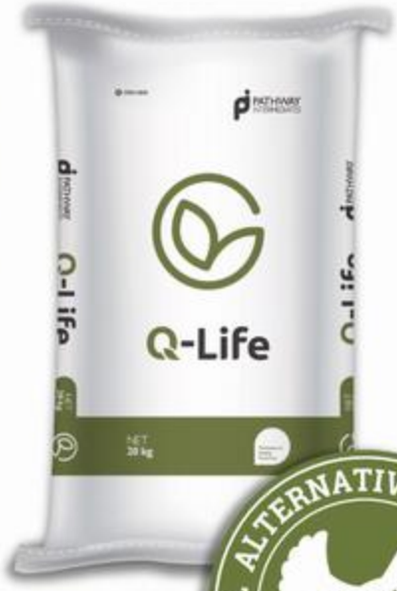

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Team ABTL visited the Sahgami Foundation, an NGO that provides free education to over 80 children of construction workers and laborers before admitting them to government schools. The foundation has been providing this social service for the past nine years. During our visit, we distributed eggs, educated the children on the benefits of daily egg consumption, and conducted several interactive activities related to World Egg Day.

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Team ABTL also visited Krantisinh Nana Patil College of Veterinary Science in Shirwal. We delivered a presentation highlighting facts, figures, and the benefits of eggs. A cooking competition was also organized for students, challenging them to create dishes using egg recipes. Prizes were awarded for the best food and presentation.

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Polyphosphates in Broiler Chicken:
What, why, How Much, and Where

Dr. C R Behl[1] and Prof. G Devegowda[2]
[1]Chairman, Indian Poultry Alliance - Allana and
[2]Emeritus Professor, Veterinary College, Bangalore

1. What Are Polyphosphates?

- Food-grade salts of phosphoric acid (e.g., sodium tripolyphosphate, tetrasodium pyrophosphate).
- Classified as processing aids and additives.

2. Why Are They Used in Poultry?

- **Moisture Retention:** Reduces cooking losses, keeps chicken juicy.
- **Tenderness:** Breaks protein cross-links, giving softer texture.
- **Shelf Life:** Slows oxidation and microbial spoilage.
- **Economic Benefit:** Increases yield (weight gain through water binding).

3. Ideal broiler size for value & tenderness

Very small birds have a high bone-to-meat ratio; very large birds can be tougher and harder to inject uniformly. For most retail/food-service programs, an eviscerated weight of 1.5-2.0 kg balances meat yield, tenderness, and even injection/tumble performance.

4. How Much is Allowed?

- **USA (USDA/FDA):** Up to 0.5% in the finished poultry product (as phosphorus).
- **Common practice:** chicken injected or marinated with 0.3-0.4% phosphate solution plus salt.
- Overuse not allowed—excess leads to soapy taste and spongy texture.

5. Use in Fresh Chilled Chicken

- Polyphosphates may be used in marinated, chilled, or ready-to-cook poultry to retain juiciness during storage and cooking.
- In premium fresh chilled chicken labelled "natural," "organic," or "no additives," polyphosphates are not permitted.
- In standard supermarket chilled chicken in the USA, use is common in flavoured or injected products (e.g., "moisture-enhanced," "seasoned," "tender & juicy" chicken).

6. Where Are They Allowed?

- **USA:** Widely used in frozen, chilled, and processed poultry. Must be declared on label.
- **India:** FSSAI permits in processed meats; less common in fresh chilled chicken.

7. Key Takeaway

Polyphosphates are legal, regulated food additives in broiler chicken.

They are most often used in frozen and marinated chilled products to improve juiciness, tenderness, and shelf life. However, "natural" or premium fresh chilled chicken excludes them, as consumers increasingly prefer additive-free labelling.

8. General Best Practices

1) Needles thin, sharp, correctdepth and Calibrate injector regularly for even flow across all needles.
2) Inject fresh chilled chicken (0-4 C, < 48 hrs from slaughter), not frozen-thawed.

For retail markets in India, keep injection levels 10-12% to balance yield and consumer acceptance.

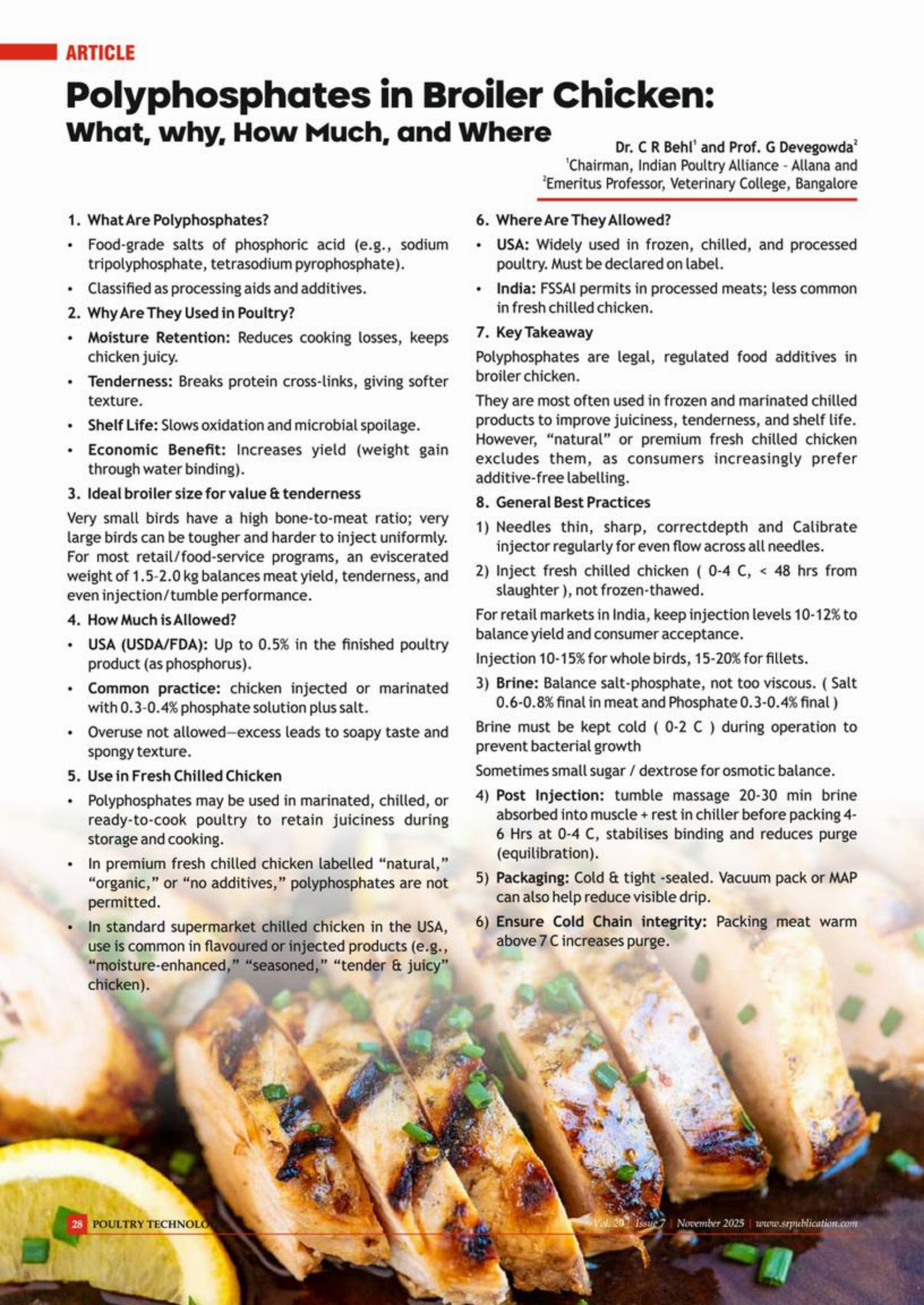
Injection 10-15% for whole birds, 15-20% for fillets.

3) **Brine:** Balance salt-phosphate, not too viscous. (Salt 0.6-0.8% final in meat and Phosphate 0.3-0.4% final)

Brine must be kept cold (0-2 C) during operation to prevent bacterial growth

Sometimes small sugar / dextrose for osmotic balance.

4) **Post Injection:** tumble massage 20-30 min brine absorbed into muscle + rest in chiller before packing 4-6 Hrs at 0-4 C, stabilises binding and reduces purge (equilibration).
5) **Packaging:** Cold & tight -sealed. Vacuum pack or MAP can also help reduce visible drip.
6) **Ensure Cold Chain integrity:** Packing meat warm above 7 C increases purge.



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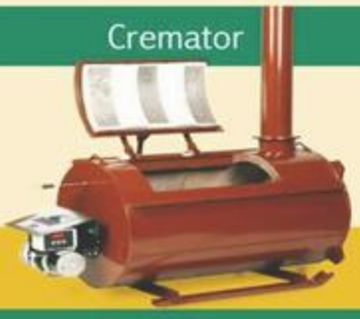

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Mr. Shabbir Ahmed Khan

Recognised by PFI team on 36th AGM

Recognition award to Mr. Shabbir Ahmed Khan from Poultry Federation of India for 60+ years of active service in poultry industry and being one of the founding members 38 years ago presented by PFI President Ranpal Dhanda, Vice President (HQ) Sanjeev Gupta and team

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Efficacy of Enterosure™ HC Dry in Broiler Breeder During Laying Period

Jagadeesh N and Chanthirasekaran R

Gut Health: A Cornerstone of Poultry Performance

The gastrointestinal tract (GIT) of poultry harbors a diverse microbiota—bacteria, fungi, protozoa, and viruses—that begins to develop at hatch through exposure to feed, the environment, and handlers. This microbial community plays a vital role in digestion, nutrient absorption, immunity, and overall bird performance. In high-performing poultry lines, elevated feed intake can strain the digestive system, leading to undigested nutrients in the small intestine. This often triggers dysbiosis—a microbial imbalance—resulting in inflammation, compromised gut integrity, and nutrient malabsorption.

A healthy gut microbiome is essential not only for optimal nutrient utilization but also for maintaining physiological balance and immune function. Poor gut health can depress growth and productivity, making intestinal health a key focus for the poultry industry. Additionally, the GIT influences food safety, animal welfare, and environmental sustainability.

The global restriction on antibiotic growth promoters due to rising antimicrobial resistance has led to increased digestive disorders in poultry. While alternatives such as enzymes, probiotics, organic acids, and plant extracts are available, they often fall short in delivering consistent performance and pathogen control. This has intensified the need for advanced, comprehensive solutions that enhance intestinal resilience and effectively manage enteric diseases.

To meet the growing demand for sustainable and profitable protein production, the poultry sector must prioritize gut health through innovative strategies that go beyond conventional approaches—ensuring robust immunity, efficient feed conversion, and improved overall performance.

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c) Better growth of commensals
d) Reduces the expression of the Salmonella invasive gene.
e) Reduces dysbacteriosis.
f) Improves FCR
g) Efficient and Sustainable Poultry Production

OBJECTIVE

The main objective of the trial was to check the efficacy of ENTEROSURE™ HC Dry on Gut Health in Broiler Breeders during the laying period in terms of mortality, egg production, and hatching egg selection in actual farm conditions in Cobb-430Y broiler breeders.

Trial Design

The experiment was conducted in a well-managed broiler breeder farm in India in 2023. The details of the experimental groups are given in Table 1. A total of 20316 Cobb-430y broiler parent female birds were selected for a 16-week study. Birds were placed in two different sheds with an open-sided California cage system under natural environmental conditions. The birds were fed with a breeder mash feed diet and *ad libitum* water during the experimental period.

Table 1: Dosage and trial details of experimental groups

Group	Description	Number of Birds
Control	Breeder diet without any probiotics/prebiotics	10,316
Treatment - ENTEROSURE™ HC Dry*	Broiler diet with ENTEROSURE™ HC Dry through feed for 16 weeks at the dose of 200g per ton of feed	10,000

Note: * ENTEROSURE™ HC Dry is an intestinal health enhancer developed by Kemin Industries, containing multifunctional, broad-spectrum *Bacillus* strains having specific modes of action against *Clostridium perfringens*, *Enteric E. coli*, *Salmonella* species and *Enterococcus* species.

Parameters Measured

- Livability - assessed in terms of mortality %
- Productivity - assessed by Hen Day Production %
- Hatching eligibility - assessed by Hatching Egg selection %

Results

Results indicated that the treatment group fed with ENTEROSURE™ HC Dry had superior performance in terms of mortality, production, and selection percentage. The study revealed that ENTEROSURE™ HC Dry could be used from the initial chick stage or from housing to till culling to get better production performance; otherwise, an initial cushioning period of 5 to 6 weeks is required to combat field or bird challenge and to get superior performance. The detailed results are mentioned below.

PROMOIS ПРОМОИС INTERNATIONAL

AMINO ACID *(BEST SELLER CATEGORY)*

- DL-Methionine
- L-Lysine Hcl
- L-Threonine
- L-Tryptophan
- L-Valine
- L-Isoleucine

BULK PRODUCTS

- Di Calcium Phosphate (DCP)
- Monocalcium Phosphate (MCP)
- Sodium Bicarbonate
- Premix (Layer)
- Premix (Broiler)

FEED SUPPLEMENT

- Choline Chloride (CCL)
  Liquid 75% /Powder 60%
- Toxin Binder
- Betain Hcl
- Acidifier
- Phytase
- Multienzyme
- Electrolyte
- Glycerine

PROMOIS ANTIBIOTICS

- Chlortetracycline (CTC)
- Tylosin Phosphate 10%
- Tiamulin10,45,80%
- Enrofloxacin
- Florfenicol
- Azithromycin
- Ciprofloxacin
- Amoxicillin
- Virginiamycin 11%
- Ivermectin
- Anticoccidials

VITAMINS

- Vitamin - A
- Vitamin - E
- Vitamin - C
- Vitamin - B1, B2, B9
- Vitamin - K

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Impact on Mortality

Over the 16-week trial period, female mortality in the ENTEROSURE™ HC Dry group was 1.06% higher than the control group during the first 6 weeks of supplementation. However, in the following 10 weeks, mortality in the ENTEROSURE™ group was 0.94% lower than the control group, indicating improved outcomes over time.Week-wise mortality details for both ENTEROSURE™ and the control group are given in a graphical representation in Figure 1.

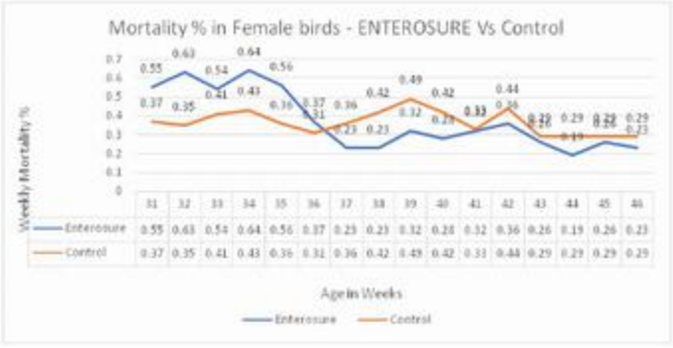


Figure 1: Mortality % of experimental groups (Female birds) during the trial period.

Hen Day production (HD%)

In the total trial period of 16 weeks, the ENTEROSURE™ HC Dry group had Hen Day production of minus 1.0% compared to the control group in the first 6 weeks after supplementation and 0.7% higher compared to the control group in the next 10-week period with ENTEROSURE™ supplementation. Week-wise Hen Day production details for both ENTEROSURE™ and the control group are given in graphical representation in Figure 2.

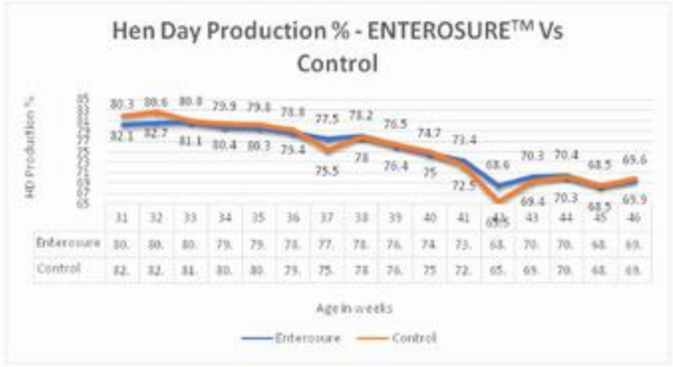


Figure 2: Hen Day Production % of experimental groups during the trial period

Hatching Egg Selection (HE%)

In the total trial period of 16 weeks, the ENTEROSURE™ HC Dry group had a Hatching Egg Selection % on par with the control group in the first 6 weeks after supplementation and 0.2% higher compared to the control group in the next 10-week period with ENTEROSURE™ supplementation. Week-wise Hatching Egg selection % details for both ENTEROSURE™ and the control group are given in graphical representation in Figure 3.

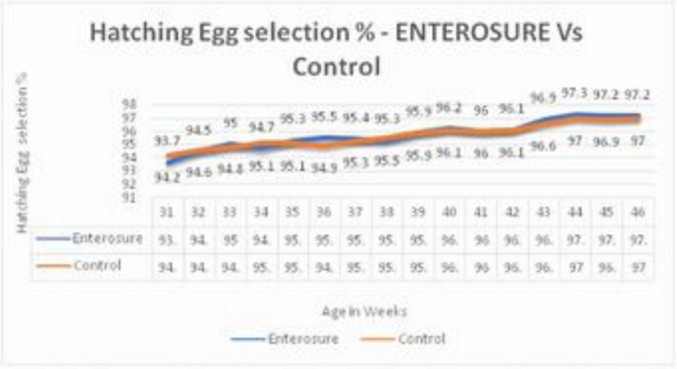


Figure 3: Hatching Egg Selection % of experimental groups during the trial period

ENTEROSURE™ HC Dry Enhances Broiler Breeder Performance

The use of ENTEROSURE™ HC Dry in broiler breeders has demonstrated clear benefits in productivity, cost-efficiency, and chick quality. During a 16-week trial period—from 31 to 46 weeks of age—supplementation led to a 0.94% reduction in female mortality, a 0.7% increase in total egg production, and a 0.2% rise in hatching egg output during the final 10 weeks, following an initial 6-week adaptation phase. Additionally, there was a 0.1% improvement in overall production and selection rates.

These results suggest that ENTEROSURE™ HC Dry can be effectively used throughout the bird's lifecycle—from chick stage to culling—to support consistent performance. When introduced mid-cycle, the product typically requires 5 to 6 weeks to overcome initial field and bird-level challenges before delivering measurable improvements. This makes ENTEROSURE™ HC Dry a strategic solution for enhancing intestinal health and maximizing productivity in broiler breeder operations.

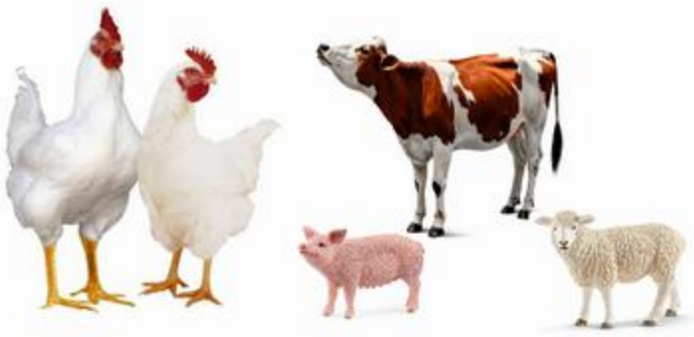
Conclusion

The study demonstrates that ENTEROSURE™ HC Dry significantly enhances the economic performance of broiler breeder birds by improving key productivity metrics such as Hen Day egg production, hatching egg selection, and overall livability. These results position ENTEROSURE™ HC Dry as a highly effective intestinal health promoter, capable of supporting gut integrity, optimizing production parameters, and improving bird survivability in breeder layer operations.

References are available upon request

KEMIN
Compelled by Curiosity™

Jagadeesh N and Chanthirasekaran R
Kemin Industries South Asia Pvt. Ltd.



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- MANGANESE SULPHATE
- MANGANESE OXIDE
- COPPER SULPHATE
- COBALT SULPHATE
- CALCIUM IODATE
- SODIUM SELENITE
- COBALT CARBONATE

VITAMINS

- VITAMIN - E
- VITAMIN - A
- VITAMIN -C
- VITAMIN - K
- VITAMIN - B9

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GLYCERINE

BULK PRODUCTS

- DI CALCIUM PHOSPHATE (DCP)
- MONO CALCIUM PHOSPHATE (MCP)
- SODIUM BI CARBONATE (SBC)

AMINO ACID

- DL-METHIONINE
- L-LYSINE HCL
- L-THREONINE
- L-TRYPTOPHAN

ANTIBIOTICS

- ENROFLOXACIN
- FLORFENICOL
- AZITHROMYCIN
- CIPRFLOXACIN
- AMOXICILLIN
- VIRGINIAMYCIN 11%
- TIAMULIN 10, 45, 80%
- TYLOSIN
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ARTICLE

Poultry Immunity 2.0:
The Rise of Vector Vaccines

[1]Dr.Sayyed Mushtaque and [2]Dr. Akash Wadal

Vector vaccine technology has revolutionized poultry health management by addressing major shortcomings of traditional immunization methods. This approach employs harmless viral vectors, such as the turkey herpesvirus (HVT), to deliver protective antigen genes from important poultry pathogens, thereby triggering strong and long-lasting immune responses that closely resemble natural infection.

Development Pathway

The breakthrough came in 2006 with Vaxxitek® HVT+IBD, the first widely adopted recombinant poultry vaccine launched by BoehringerIngelheim. Using HVT as a vector platform, it carried the major antigen of Infectious Bursal Disease Virus (IBDV), demonstrating the feasibility of vector-based protection. Building on this success, more advanced formulations emerged, such as Vaxxitek® HVT+IBD+ND and Vaxxitek® HVT+IBD+ILT, which deliver combined immunity against multiple diseases including Marek's disease, Newcastle disease, and infectious laryngotracheitis. With more than 130 billion doses of the original Vaxxitek® HVT+IBD used worldwide, this category of vaccines has become a backbone of modern poultry vaccination programs.

Technology Framework

- Vector vaccines act as biological carriers. Using precision bioengineering, protective genes are seamlessly inserted into the vector's genetic code. Once administered, the vector infects bird cells harmlessly but expresses the target antigens, stimulating protective immunity. The core industrial benefits include:
- Compatibility with high maternal antibody levels, reducing immunity gaps in chicks.
- Minimal risk of post-vaccination adverse effects compared to live attenuated vaccines.

Single-dose coverage with scalable in ovo or hatchery administration.

- Multivalent protection (bi- and trivalent options) cutting down the number of vaccinations.
- DIVA capability (Differentiating Infected from Vaccinated Animals), aiding disease eradication programs.

Genetic Engineering Framework

- **Donor gene selection:** Genes encoding key protective antigens from poultry pathogens are identified and chosen for insertion.
- **Vector integration:** These donor genes are incorporated into non-essential regions of the vector's genome, ensuring the vector retains replication ability without pathogenic effects.
- **Recombinant expression:** After vaccination, the engineered vector delivers and expresses the foreign antigen inside bird cells, initiating a robust immune response while maintaining flock safety.

Industrial Advantages

- **Maternal antibody resilience**: Cell-associated HVT-vectored vaccines provide early protection, bypassing interference from maternal antibodies and allowing effective immunization from hatch.
- **Broad disease control:** Licensed vector vaccines now cover major poultry diseases such as infectious laryngotracheitis, infectious bursal disease, Newcastle disease, Mycoplasma gallisepticum, and avian influenza.
- **Safety and reliability:** Each vaccine undergoes rigorous testing for efficacy, safety, and public health standards, ensuring consistent performance in commercial poultry production.
- **Targeted innovation:** The characteristics of each vector platform—such as durability, administration compatibility (in ovo or hatchery), and capacity for multivalent protection—directly shape industry adoption.

Strategic Impact

- *For integrated poultry operations, vectored vaccines deliver safe, efficient, and scalable* immunization solutions that optimize hatchery vaccination programs, reduce health risks, and support sustainable disease-prevention strategies. By merging molecular engineering with practical field performance, vector vaccines have become a cornerstone of modern industrial poultry health management.
- Vector vaccine platforms in poultry production utilize a range of viral and bacterial carriers, each bringing distinct safety and immunogenicity features that influence their acceptance for large-scale use. Careful vector selection allows producers to match vaccination strategies with disease challenges, age of flocks, and economic priorities in industrial settings.

Key Vector Platforms

Herpesvirus of Turkeys (HVT)

- **Safety:** Non-pathogenic and proven safe, even in neonatal flocks.
- **Immunogenicity:** Strong baseline protection against Marek's disease, with engineered variants covering IBD, ND, and ILT.
- **Practical use:** Widely employed for in ovo and day-old chick vaccination, enabling early, long-lasting immunity while overcoming maternal antibody interference.

VITAMINS

- SWISS VITAMIN - A
- SWISS VITAMIN - E
- SWISS VITAMIN - C
- SWISS VITAMIN - K
- SWISS VITAMIN - D2
- SWISS VITAMIN - B2
- SWISS VITAMIN - B9
- SWISS VITAMIN - D3
- SWISS VITAMIN - B5
- SWISS VITAMIN - B1

AMINO ACIDS

- DL-Methionine
- L-Lysine Hcl
- L-Threonine
- L-Tryptophan
- L-Valine
- L-Isoleucine

SWISS GLYCERINE

ANIMAL FEED SUPPLEMENT

SWISS CHEMIE

SWISS ANTIBIOTICS

- Chlortetracycline 15% (CTC) (BEST SELLER)
- Tiamulin 10/45/80
- Amoxicillin
- Ciprofloxacin
- Doxycycline
- Albendazole
- Fenbendazole
- Lincomycin Hcl
- Azithromycin
- Oxytetracycline
- Enrofloxacin
- Tetracycline Hcl
- Levofloxacin
- Virginiamycin 11%
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Fowl Poxvirus (FPV)

- **Safety:** Demonstrates a strong safety profile with no adverse effects.
- **Immunogenicity:** Frequently used to deliver genes from ILT and avian influenza viruses, making it valuable for older birds requiring stronger antigenic stimulation.
- **Application:** Best suited for older flocks where maternal antibody levels have waned.

Adenovirus (FAdV and HAdV-5)

- **Safety:** Replication-deficient forms, particularly human adenovirus serotype-5 (HAdV-5), do not spread after administration and avoid unintended genomic integration.
- **Immunogenicity:** Effective in eliciting cellular immunity and survival following challenge; however, antibody responses may require higher doses or boosters for full efficacy.
- **Operational advantage:** No natural pre-existing immunity in poultry, preventing maternal antibody interference.

Salmonella

- **Safety:** Engineered strains can deliver antigens safely to mucosal surfaces.
- **Immunogenicity:** Capable of generating both mucosal and systemic responses, making them suitable for oral delivery where gut immunity is key.
- **Industry status:** Still in experimental phases, not yet common in commercial poultry vaccines.

Strategic Research and Industrial Outlook

- HVT dominates commercial use owing to its combination of safety, early administration potential, and proven multivalent constructs.
- FPV remains valuable where late-life immunity is required, especially for ILT and avian influenza strategies.
- Adenoviral vectors hold promise as flexible and safe carriers, though work continues to enhance humoral responses and secure regulatory adoption.
- Salmonella-based vectors are generating interest for oral vaccines, which could provide low-cost, labor-efficient immunization targeting intestinal pathogens.
- The industrial trajectory is moving toward multivalent recombinant platforms that integrate multiple antigens into one product. Such approaches simplify hatchery vaccination programs, reduce handling stress, improve welfare, and lower costs — key drivers for adoption in large-scale poultry operations

"Advancements and Advantages of Vector Vaccines in Poultry Health"

Vector vaccines in poultry are developed through a precise process that ensures safety, stability, and strong immunity. Protective genes, such as VP2 from IBDV or HA from AIV, are inserted into vectors like HVT, FPV, or adenovirus without affecting their safe replication. Advanced recombinant tools—including strong promoters, codon optimization, and signal peptides—maximize antigen production in host cells after in ovo or hatch-day vaccination. These expressed proteins trigger both cellular (T-cell) and humoral (B-cell) immune responses, closely mimicking natural infection without disease risk. The immunity produced is durable, broad, and safe, overcoming risks of reversion or transmission. Delivery through in ovo or subcutaneous methods ensures efficient mass immunization, offering reliable protection, improved flock health, and streamlined vaccination protocols in industrial poultry systems.

Vector Vaccines in Modern Poultry Farming

Vector vaccines, such as Vectormune® ND and Vaxxitek® HVT+IBD+ND, protect against major diseases like ND, IBD, AI, MD, and ILT when administered at hatcheries. They stimulate strong immune responses within 9-12 days and provide long-lasting protection, often covering the entire productive lifespan with a single dose. Dual and trivalent formulations protect against multiple diseases at once, reducing labor, ensuring full hatchery coverage, and lowering virus shedding. With independence from maternal antibody interference and minimal side effects, these vaccines are ideal for large-scale poultry operations, promoting efficient, safe, and welfare-focused production.

Administration and Immunization strategies

In industrial poultry, vector vaccines are mainly delivered via in ovo injection at 18 days of incubation or subcutaneous injection in day-old chicks, ensuring early and consistent immunity. HVT-based vectors are particularly valuable as they bypass maternal antibody interference, offering strong early protection against diseases like Newcastle Disease, often supported by spray vaccines in endemic areas. These vaccines are safe, require only a single dose, and reduce labor, though challenges include high development costs, regulatory barriers, and limits to multivalent design. Overall, vector vaccines enhance flock health, biosecurity, and efficiency, with ongoing research focused on improving stability and broadening adoption

Future developments in vector vaccine technology

Multivalent vector vaccines are being developed to protect against multiple poultry diseases in a single shot, reducing labor and simplifying immunization schedules. Hybrid strategies, such as combining recombinant HVT with traditional vaccines, show stronger immune responses, higher antibody titers, and better flock-level protection. Innovations like recombinant HVT expressing NDV, IBDV, and ILTV, along with new genome engineering tools, promise faster vaccine development. Research also focuses on safer viral and bacterial vectors, precise in ovo delivery, and automated systems to improve efficiency and animal welfare. These advances aim to provide broader protection, fewer doses, and more sustainable vaccination for the poultry industry.

[1]Dr. Sayyed Mushtaque and [2]Dr. Akash Wadal
[1]General Manager-Breeder and Hatcheries
[2]Hatchery Coordinator - MH Region
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ARTICLE

A Herbal Approach to Transform
Genetic Potential into Consistent Productivity

Dr. Rakesh Tiwari

Reproductive health in poultry—particularly layers and breeders—is the cornerstone of successful commercial poultry production. Optimal egg production, fertility, hatchability, and eggshell quality are all dependent on a healthy and well-managed reproductive system. As the poultry industry seeks **residue-free, eco-friendly**, and sustainable alternatives to synthetic additives and antibiotics, **herbal** approaches are gaining attention as promising tools to enhance reproductive performance naturally.

A growing body of research and field experience now supports the use of **medicinal herbs and phytogenic feed additives** to improve reproductive health in poultry. These natural agents not only promote hormonal balance and reproductive organ function but also contribute to better overall health, leading to consistent egg production and superior egg quality.

This article explores how a **synergistic blend of herbs**—including **Shatavari, Jivanti, Shilajit, Makoy, Kasni, Kantkari, Aloe vera, and Ashoka**—along with **chelated minerals and essential vitamins** can naturally support and enhance reproductive health in poultry and optimize ovarian functions, egg production, and eggshell quality.

Understanding Reproductive Challenges in Poultry

Reproductive performance in poultry can be compromised due to:

- Nutritional imbalances (especially calcium, phosphorus, and vitamins)
- Hormonal disruptions due to environmental stress
- Infectious diseases and poor immunity
- Aging and oxidative stress on reproductive organs

These issues manifest in forms such as:

- Poor yolk development
- Declining egg production with age or environmental stress
- Poor eggshell quality due to calcium or vitamin D3 deficiency
- Reduced fertility or hatchability in breeders
- Hormonal imbalances due to nutritional or environmental factors

In Layers, reproductive performance is primarily evaluated by:

- Egg production rate
- Egg weight and size
- Shell strength and thickness
- Yolk quality

In Breeders, attention is paid to:

- Fertility and mating success
- Hatchability
- Sperm quality (in males)
- Oviduct and ovarian function (in females)

Eggshell Quality: A Hidden Profit Lever

Poor eggshell quality leads to cracked or broken eggs, which cannot be sold, especially in commercial table egg production. Factors affecting shell quality include:

- Inadequate calcium or phosphorus
- Vitamin D3 deficiency
- Poor intestinal health
- Excessive stress or age-related decline

Conventional Approaches and Their Limitations

Traditionally, reproductive performance has been supported using synthetic hormones, antibiotics, and vitamin-mineral supplements. While these are effective, they pose concerns related to:

- Antibiotic residues in eggs and meat
- Development of antimicrobial resistance
- Regulatory bans or restrictions on antibiotic growth promoters
- Consumer demand for natural and organic products

This shift in consumer and regulatory trends has led to increasing interest in herbal feed additives and phytogenic compounds as viable and natural enhancers of reproductive health.

A herbal-nutritional approach targets these issues at their root by supporting the reproductive system, boosting hormonal balance, enhancing mineral absorption, and strengthening immunity.

The Herbal Approach: Nature's Answer to Poultry Productivity

Herbs have been used for centuries in traditional medicine for their **antioxidant, anti-inflammatory, antimicrobial,** and **hormone-modulating** effects. In poultry, certain herbs have shown significant promise in enhancing reproductive parameters, improving ovarian functions, egg production, eggshell quality, and boosting immunity.

Studies have shown that herbal additives can:

- Increase laying rate by 5-15%
- Improve shell thickness and reduce cracked eggs
- Enhance yolk pigmentation without synthetic colorants
- Improve hatchability in breeder flocks

Key Herbal Ingredients for Optimization of Ovarian Functions, Egg Production, and Eggshell Quality

Shatavari (Asparagus racemosus) is revered as the "Queen of Herbs" for female reproductive health in Ayurveda. In poultry, it stimulates ovarian function, enhances egg-laying rates, and naturally balances estrogenic activity, making it a valuable addition to layer diets.

Jivanti (Leptadeniareticulata) serves as a powerful fertility enhancer and vitality booster. This herb improves uterine tone and egg formation while acting as a rejuvenator for reproductive tissues, supporting overall reproductive health in breeding birds.


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Shilajit (Asphaltumpunjabinum) is rich in fulvic acid, minerals, and antioxidants that boost energy and metabolism in poultry. It improves mineral absorption for better eggshell formation and enhances libido and reproductive performance, particularly beneficial for breeder males.

Makoy (Solanum nigrum) supports liver function and aids in detoxification and nutrient utilization. This herb helps prevent reproductive stress during high-production periods by maintaining optimal liver health and metabolic function.

Kasni (Cichoriumintybus) acts as a hepatic stimulant that improves calcium metabolism and vitamin D utilization. It supports shell gland function, contributing to better eggshell quality and overall calcium homeostasis in laying birds.

Kantkari (Solanum xanthocarpum) improves respiratory health, which indirectly reduces stress on layers. It also supports hormonal health and enhances reproductive tract resilience, contributing to sustained production performance.

Aloe vera is widely recognized for its antioxidant and immune-boosting properties. In poultry, it improves gut health and nutrient assimilation while enhancing calcium retention, which directly improves eggshell strength and quality.

Ashoka (Saracaindica) functions as a reproductive tract toner in birds. It reduces inflammation in the reproductive tract and enhances uterine health, making it particularly valuable for breeding stock.

Role of Chelated Minerals and Vitamins in Reproductive Success

Chelated forms of minerals demonstrate superior bioavailability compared to their inorganic counterparts. These minerals play crucial roles in eggshell formation and support optimal ovarian function.

Vitamin A is essential for maintaining the integrity of mucous membranes throughout the reproductive tract. It supports follicle development in hens and promotes healthy spermatogenesis in roosters, making it indispensable for breeding success.

Vitamin D3 plays a critical role in the absorption and metabolism of calcium and phosphorus. Deficiency of this vitamin leads to soft-shelled or shell-less eggs, poor skeletal health, and significantly reduced egg production, highlighting its importance in layer nutrition programs.

How Herbal and Nutritional Components Work Together

Combining **adaptogenic herbs** like Shatavari and Jivanti with **metabolic enhancers** like Shilajit, and **hepato-protective** agents like Kasni and Makoy, results in:

- Improved egg production and laying persistence
- Stronger eggshells due to better calcium absorption and utilization
- Enhanced fertility and hatchability in breeders
- Reduction in stress-induced reproductive decline
- Better hormonal modulation without synthetic hormones

Conclusion

The reproductive health of poultry layers and breeders is critical for the economic viability of any poultry operation. With rising concerns over antibiotic use and consumer demand for natural products, **herbal approaches offer a sustainable, safe, and effective alternative.**

The integration of **herbal ingredients** such as **Shatavari, Jivanti, Shilajit,** and **Aloe vera**with chelated minerals and essential vitamins **A** and **D3** offers a powerful, natural approach to improving reproductive health in both **layers and breeders.** This holistic strategy not only supports the endocrine and reproductive systems but also enhances overall health, immunity, and productivity without relying on synthetic hormones or antibiotics.

As the poultry industry moves toward **sustainable and residue-free** production, herbal-nutritional solutions are no longer a supplement—they are becoming a **necessity.**

Dr. Rakesh Tiwari
Global Techno Commercial Head
Vamso Biotec Pvt. Ltd.

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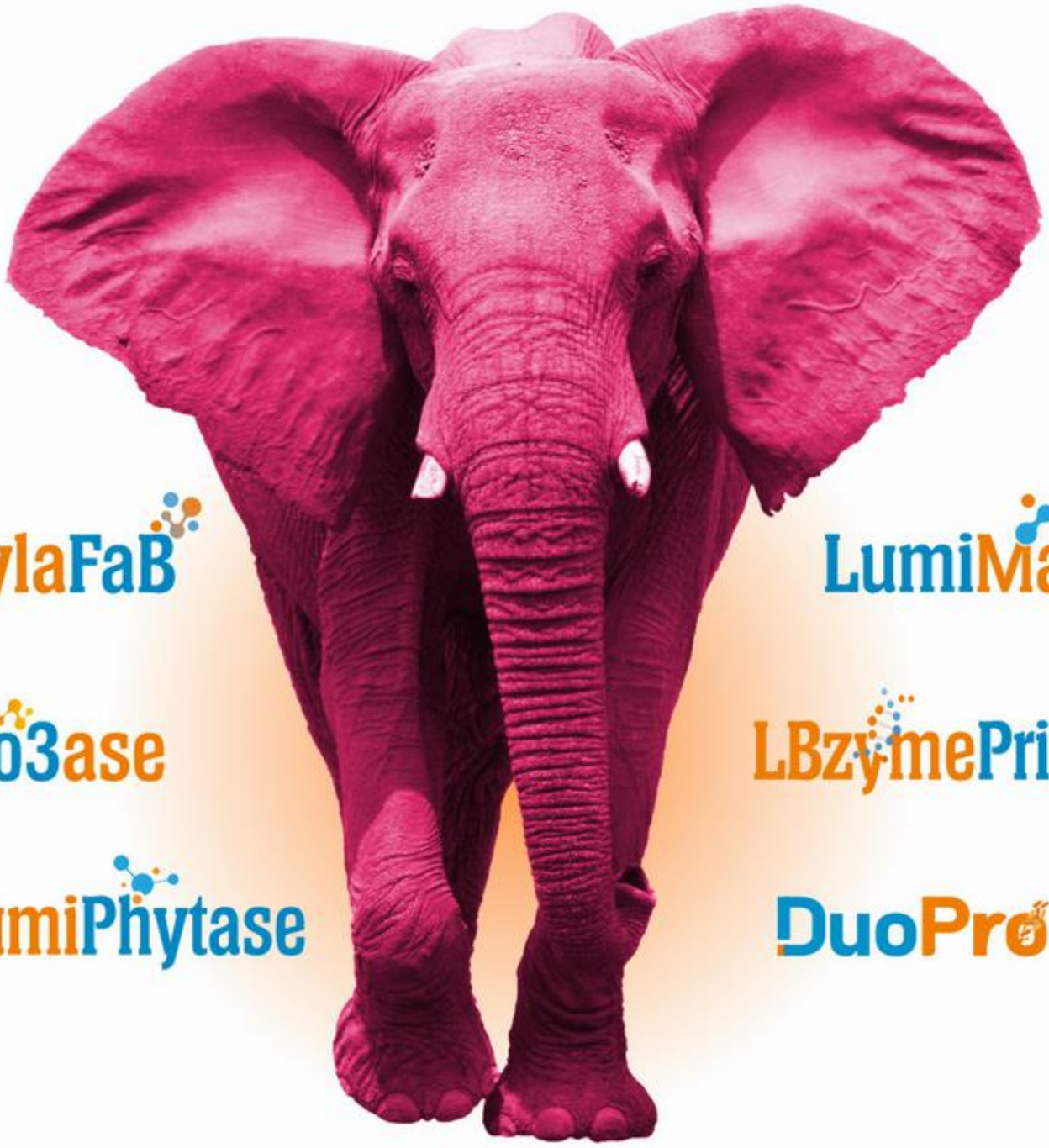

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Latin America Recognizes Indian Innovation: Dr. Sandeep Gupta's Poultry Research Takes Center Stage at VICTAM LATAM 2025

Dr. Sandeep Gupta, Ph.D. (Animal Nutrition), founder of DSAND Animal Nutrition, LSDA, and CDNA Labs Indore, India, was recently invited as a distinguished speaker at VICTAM LATAM 2025, held in São Paulo, Brazil, in September 2025.

Indore, India – October 4, 2025 – Dr. Sandeep Gupta, Ph.D. (Animal Nutrition), founder of DSAND Animal Nutrition, LSDA, and CDNA Labs Indore, India, was recently invited as a distinguished speaker at VICTAM LATAM 2025, held in São Paulo, Brazil, in September 2025. He represented India's first state-of-the-art research centre for poultry, marking a significant milestone for the nation's scientific and agricultural community.

During the event, Dr. Gupta introduced his patented innovation "Proease"—a pioneering poultry feed additive featuring cysteine protease. This breakthrough product was recognized by industry leaders and selected as a finalist for the prestigious Feed Formulation Latin America Innovation Award 2025. This global recognition underscores Dr. Gupta's outstanding contribution to the advancement of animal nutrition and showcases India's rising influence in agricultural innovation.

Dr. Gupta's participation and innovation not only spotlight the excellence of Indian research on the world stage but also inspire new possibilities for sustainable poultry production across the globe. His achievements continue to set new standards for scientific leadership and technical expertise in the animal nutrition industry.

Feed Formulation Latin America Innovation Award 2025

The Feed Formulation Latin America Innovation Award recognizes the most impactful innovations that contribute to improved palatability, digestibility, gut health, and animal nutrition. From all submissions, a panel of experts selected a list of finalists—companies that are shaping the future of animal nutrition.

Meet the winners and discover inspiring innovations during the official ceremony on **September 16 at 1:00 PM, at the Workshop Theater (booth 5100).**

Want to learn more about the innovations competing for the Feed Formulation Latin America Innovation Award? Visit the Innovation Plaza at booth 6140 and explore all the solutions that are shaping the future of animal nutrition.

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Finalists:

Company	Country	Stand	Product name + brief description
ADDCON GmbH	Germany		**pwrPlanet® EMC** – Metabolic stimulant with natural antimicrobial properties.
Anibil B.V.	The Netherlands	2130-A	**Lionol** - Natural supplement that stimulates IGF-1, boosting energy, immunity, and growth in newborn piglets.
De Heus	Brazil	2130-M	**GutGuard** – Strengthens gut health and microbiota, blocks pathogens, and improves poultry performance.
Dr. Eckel Animal Nutrition GmbH & Co. KG	Germany		**AntaBiPhyt NXT** – Phytogenic additive made from hops and licorice, supports intestinal health and reduces antibiotic use.
DSAND Animal Nutrition Pvt Ltd	India		**PROEASE®** – Cysteine protease enzyme that enhances protein digestibility and amino acid availability.
Elahed Golan Animal Poultry and aquatic Feed Production Factory	Iran		**Spiro Max** – Alfalfa pellets enriched with algae through an algae-based supplement.
HABU Usman farm	Nigeria		**Eco Poultry Plus** – Sustainable poultry feed with insect protein, improves health and reduces environmental impact.
HEMOPROT	Belgium		**Actipro EP44** – Functional piglet feed ingredient made from upcycled dried whole egg powder.
ICC Animal Nutrition / CC Industrial Comercio Exportacao e Importacao	Brazil		**MaxDigest® ORY Swine** – Yeast extract from sugarcane fermentation that supports gut health and performance.
Mahian Mokamel Kimia	Iran		**Automated Mycotoxin Reduction System** – Multi-stage system that removes mycotoxin-contaminated grains for safer feed.
Quality Technology International, Inc.	E.U.A.	2131	**MCM** – Natural prebiotic feed additive.
Reza Vakil	Iran		**Smart Detection and Removal** – Modular system using sampling and computer vision to eliminate mycotoxin-contaminated grains.
VEOS	Brazil		**Actipro EP44** - Actipro EP44 is a functional piglet feed ingredient made from upcycled dried whole egg powder.
VivoPharm Animal Nutrition	The Netherlands	2130-I	**Udder Vital Bolus** – A slow-release bolus that supports udder health and immunity during the calving period.

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*For further details, please contact your nearest sales representative from DSAND

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DSAND Animal Nutrition Pvt. Ltd.

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Customer Care: +91-80855 00773 **E-mail** : info@dsandindia.com,
Website : www.dsandindia.com

HUVEPHARMA

VITAMIN D: SUNSHINE VITAMIN

Vitamins are chemical entities which are essential in small quantities for maintaining the proper metabolic process in animals and birds. These essential nutrients can't be synthesised at all or not in sufficient quantities. So, there is need to give these vitamins to animal and bird in feed as daily allowance.

Vitamins are two types as Fat soluble and Water soluble, fat soluble are A, D, E and K and water soluble are B complex and Vit C.

Vitamin D is fat soluble vitamin which regulates calcium haemostasis, which is vital for normal growth, bone development, egg shell formation and routine metabolic processes in birds. Vitamin D_3 production process can be activated when sunshine spreads on bird skin. But due to present extensive farming and managemental practices and housing method, it is difficult to get sunlight to form the Vit. D process naturally in birds. So, there is need to supply proper Vit D sufficient levels of Vit D through feed or water.

Two major forms of Vit D are available i.e., Ergocalciferol or Vit D_2 and Cholecalciferol or Vit D_3. Ergocalciferol is derived from plant steroid, ergosterol and Cholecalciferol is product from the precursor 7 dehydrocholesterol which further form absorbable Vit D conversion in animals and birds. In birds pre-vitamin 7 dehydrocholesterol is derived from cholesterol or squalene, and they present in large quantity in skin of the animals & birds.

The provitamin 7-dehydrochlolesterol which is present in epidermis of skin get converted to cholecalciferol with UV irradiation from sunlight, then it get absorb in blood circulatory system after binding it with Vit D blood transport protein (DBP).

As of this Vit D form is not biologically active and must be converted to biologically active form which takes place in liver and kidney before it absorbs in system.

Once Vit D reaches to liver for transformation, in which a microsomal system of hydrolysate to produce 25-hydroxy-vit D[25-(OH)D].

This metabolite is major circulating form of Vit D in blood, which is transported to kidney with Vit D transport globulin. In kidney it is converted into various compounds including 1,25-(OH)2D_3 which is also known as Calcitriol.

Then this compound is transported to the intestine, bones or other organs where it is involved in metabolism of calcium and phosphorous.

In maintaining the normal blood calcium levels, Vit D acts along with Parathyroid hormone. Vit D facilitates absorption of calcium through intestine.

Vit D plays important role in regulating Calcium haemostasis which is also required for skeletal development, embryo development, immunity and basic metabolism processes. It becomes a vital nutrient in breeders, layers, broilers and chicks.

Bio D®

In animal nutritional supplement market Huvepharma's Bio D product outperform due to its uniqueness. The product Bio D is 25-hydroxy vitamin D_3 (Calcidol) which is manufactured by bacterial fermentation process with use of natural ingredients. As it is manufactured by natural process its bioavailability is TWO times more than its synthetic form products available in the market. It is very stable during long storage and pelleting temperature with 98.6% recovery at temperature 120° C for 30 min.

In market various products of active Vit D_3 are available as feed additives. Active Vit D_3 can be destroyed with over treatment with UV light and by peroxidation in presence of various fatty acids in feed.

Vit D_3 is fat soluble vitamin and it is mainly absorbed in ilium part of intestine, where the feed remains for long duration. The fat absorption is depended on presence of bile salts for lipid absorption. If there is stress on liver due to mycotoxicosis, fatty liver, IBH where liver function gets stressed, bile production and secretion may not be normal, then the Vit D metabolism in liver may get hampered and so the deficiency symptoms may be seen.

Bio D®

Tune your vitamin D in total safety

HUVEPHARMA®

Follow us at: huvepharma SEA

As Huvepharma's product Bio D which is 25-hydroxy vitamin D_3 is directly get absorbed and activated in kidney and it bypasses liver metabolism and conversion. Vit D_3 is also important in broiler breeder nutrition which are high performing birds, needs vitamins for proper skeletal development.

Bio D absorption is good as it is natural fermented product. In eggs Vit D_3 absorbed & get accumulated in egg yolk, which gets utilised by newly hatched chicks in first week. As the lipid digestion mechanism is not well developed in early life in chick, chick can use Vit D_3 from yolk. So, in breeder Bio D is essential not only for own skeletal development but also for early chick nutrition. It is also important for egg quality, hatchability, immunity etc. making it necessary. So proper supplementation of the Vitamin is important for optimizing broiler breeder operations.

Vit D plays important role in regulating Calcium haemostasis which is also required for skeletal development, embryo development, immunity and basic metabolism processes. It becomes a vital nutrient in breeders, layers, broilers and chicks.

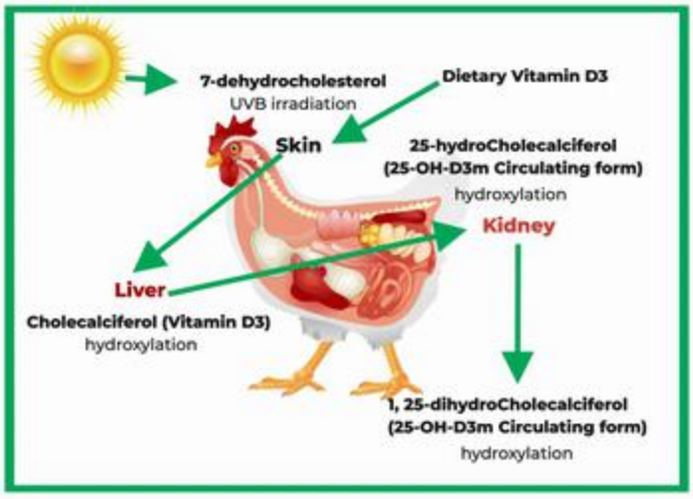
In present commercial broiler operations fast growth rate is obtained in muscle and skeletal development, which calls for fast bone mineralisation without any porosity.

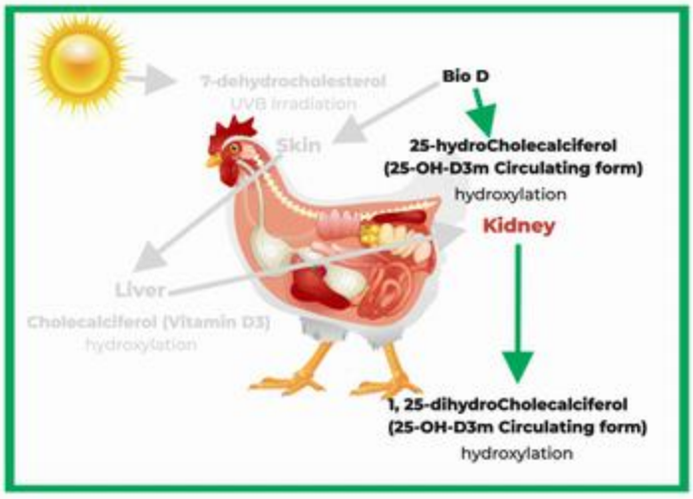
Otherwise, bird may show lesions of lameness, femur head necrosis (osteomyelitis), tibial dyschondroplasia. Bio D® helps in Ca and P haemostasis to maintain proper growth of broiler.

Bio D® can support immunity system to have better defence mechanism for bacterial and viral diseases in poultry.

In laying hens, if the laying period get extended, where egg quality and egg shell may be a problem in later stages of lay. In this mechanism Vitamin D_3 plays an important role for regulation of intestinal calcium absorption. Bio D® acts as metabolite which can bypass liver hydrolysis, so the action of Bio D® is not dependable on liver function which may affected due to mycotoxins, fatty liver syndrome, IBH etc.

In conclusion Vitamin D is essential for birds and as standard diet ingredients do not contain enough of this vitamin, it should be supplemented to make sure the animals vitamin D needs are met throughout production as efficiency is key in diet formulation, opting for a highly effective vitamin D metabolite makes sense. This is where Bio D® which contains 25-hydroxy vitamin D_3 with unique properties due to its fermentation origin.





- 25-hydroxyvitamin D3 undergoes conversion in the kidney hence follow negative feedback mechanism and avoiding the toxicity and Ca /P imbalance in the body.
- Bio D® is safe for use up to 20x the recommended dose.
- Bio D® helps to increase in bone mineralization versus the synthetic derivate.
- Bio D® helps to increase in bone mineralization versus the synthetic derivate.

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Mycoplasma Synoviae:
A Silent Profit Killer in Poultry

Dr. Onkar Paradhe
Product Manager - Vaccines
Stallen South Asia Pvt. Ltd.

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

Mycoplasma synoviae occurs worldwide and is one of the two most consequential avian mycoplasmas alongside *Mycoplasma gallinarum*, with recognized roles in variety of illnesses which includes infectious synovitis with joint and tendon-sheath exudation, upper-respiratory infections and a unique laying-hen syndrome marked by decreased production and degrading shell integrity of the eggs known as Eggshell Apex Abnormalities (EAA). Transmission of *Mycoplasma synoviae*occurs both vertically via eggs and horizontally through close contact, with disease expression exacerbated by co-infections (IBV, NDV and E. coli) and environmental stressors which increases respiratory and systemic involvement. MS is a major global poultry pathogen as it shows an 11% drop in daily egg production with EAA affecting up to 24.5% of eggs in controlled trial infection, underscoring direct productivity and quality losses (Kursa*et al.*, 2019).From year 2017 to 2021a PCR study was conducted in India which showed that *Mycoplasma synoviae* positivity was around 23.61% (compared to *Mycoplasma gallinarum* 6.43%) with 15.49% co-infection. This suggests that *Mycoplasma synoviae* is the most common mycoplasma burden in Indian breeder and layer systems and a persistent economic hazard (Giram *et al.*, 2022).

MS-associated EAA has a direct influence on income and biosecurity expenses because it increases cracked and degraded eggs, increases labour costs for sorting and cleanup and decreases hatchability through higher embryonic mortality when shell integrity is compromised. EAA manifests as irregularities at the egg's apex, including thinning, increased translucency and susceptibility to cracks. These defects lead to increased egg breakage and spoilage, directly leading to degrading egg quality and marketability.

- **Etiology and Transmission:**

Mycoplasma synoviae, belongs to the *Mycoplasmataceae* family and is fastidious about its culture conditions as it requires serum and NAD on modified Frey media. The pathogenicity of strains varies due to immune evasion, adhesins, sialidase activity, nitric oxide generation and antigenic diversity.

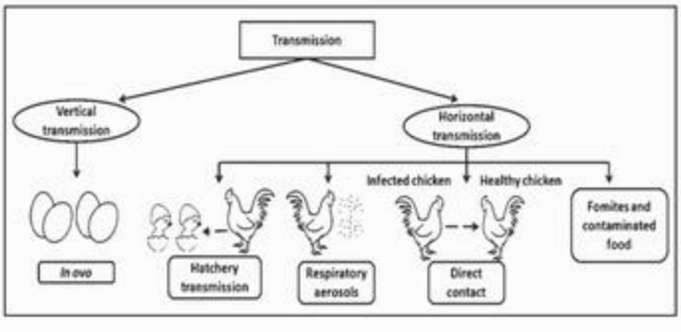

Fig. 1. Transmission of *M. Synoviae*

The host range of the MS infection includes chickens, turkeys, ducks, geese, guinea fowl, pheasants, quail and psittacines. Transmission occurs via both vertical and horizontal route. Vertical transmission takes place through transovarian infection, leading to early chick exposure, while horizontal transmission occurs via aerosol spread, respiratory secretions, fomites and human activity. Once introduced, the infection tends to persist, as infected flocks become lifelong carriers. Multi-age layer systems further support its persistence and contribute to episodic clinical outbreaks.

- **Pathogenesis:**

M. synoviae primarily enters the host through the respiratory tract, with the upper respiratory mucosa serving as the initial site of colonization. With the help of specialized surface proteins and adhesions the organism attaches to the epithelial cells which help it to evade mucociliary clearance. From the respiratory tract, it can spread locally, causing tracheitis, airsacculitis and respiratory distress.

In some birds, the pathogen disseminates via bacteraemia, reaching synovial membranes and joints, where it induces inflammation. This leads to synovitis, characterized by swelling, pain and lameness, often accompanied by exudation of yellowish synovial fluid. The organism may also localize in the tendon sheaths and bursae, producing tenosynovitis. Co-infections with other respiratory pathogens (e.g., *E. coli*, NDV and IBV) exacerbate disease severity. Chronic infections are common and affected birds may become carriers, serving as reservoirs for flock-to-flock transmission.

- **Clinical Signs:**

Mycoplasma synoviae most commonly causes subclinical upper respiratory infections or infectious synovitis and tenosynovitis, while in layers it is also associated with eggshell apex abnormality (EAA) syndrome, characterized by thin, rough, translucent shell apices and intermittent production loss (Feberwee *et al.*, 2009). The clinical expression of the disease is often expressed by stress and co-infections with pathogens such as infectious bronchitis virus (IBV), Newcastle disease virus (NDV) and *Escherichia coli* (Lockaby *et al.*, 1998).

Stallen

AN AFFILIATE OF FATRO, ITALY

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Fig.2. Dull, depressed hen, Inflammation of foot pad, hock joint and cavity filled with exudates

Affected birds may show mild respiratory involvement, including slight tracheal rales and sinusitis which are more evident under poor air quality or concurrent respiratory infections. The musculoskeletal form is marked by lameness, reluctance to walk, swelling of the hock joint, wing joints and footpads with exudative tenosynovitis of tendon sheaths and sternal bursitis. In systemic or severe cases, signs include depression, inappetence, ruffled feathers, weight loss and pale to cyanotic head parts, with occasional vasculitis and keel bursitis. Morbidity typically ranges from low to moderate, while mortality is generally low but may increase in the presence of secondary bacterial infections, wet litter, cold stress and immunosuppression.

- **Post Mortem Lesions:**
  - Respiratory tract:
    - Mild to moderate airsacculitis with thickening, opacity and presence of turbid or caseous exudate.
    - Mucoid tracheitis and sinusitis (especially when complicated by co-infections).
  - Joints and musculoskeletal system:
    - Synovitis: Swollen joints (particularly hock, wingand foot joints) with accumulation of yellow to serofibrinous exudate.
    - Tenosynovitis: Inflamed tendon sheaths filled with exudate.
    - Sternal bursitis (breast blisters) with fibrinous to caseous material.
  - Systemic involvement:
    - Generalized fibrinous polyserositis in some cases, especially with secondary *E. coli* infection.
    - Emaciation and poor body condition due to chronic disease.
  - Eggshell apex abnormality (in layers):
    - No specific gross lesion in reproductive tract, but post-mortem examination may reveal rough, thin and translucent apices of eggshells in affected flocks.

Fig.3. PM lesion showing Air sacculitis

Fig. 4. exudation of yellowish synovial fluid

- **Diagnosis:**

Diagnosis of MS relies on combination of clinical observation, serology, microbiology and molecular techniques. Observation of respiratory signs such as sneezing, coughing and nasal discharge, along with joint or tendon swelling indicative of synovitis or tenosynovitis and specially in layers, eggshell apex abnormalities like thin, rough or translucent apexes can be observed. However, clinical signs alone are notdefinitive, as they can overlap with other infections like NDV, IBV or E. coli.

Serological tests, including ELISA, rapid plate agglutination (RPA) and hemagglutination inhibition (HI), are useful for flock-level monitoring, though maternal antibodies and past exposure can complicate interpretation. Microbiological isolation from choanal or tracheal swabs and synovial fluid using specialized media allows definitive identification of MS, but the process is slow and prone to contamination. Molecular methods such as PCR and real-time PCR offer rapid, sensitive and specific detection of MS DNA, even at low bacterial loads. For accurate diagnosis, a combination of clinical assessment, serology and molecular confirmation is recommended, especially in flocks showing respiratory disease, joint swelling, or eggshell defects.

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- **Treatment**

Alomg with careful use of antibiotics, proper management practices and vaccination strategies are very important in *Myciplasma synoviae* management. Treatment typically relies on antimicrobials such as tylosin, tiamulin, doxycyclineor enrofloxacin, which can reduce bacterial load and clinical signs, but complete eradication is difficult due to intracellular persistence. Widespread and indiscriminate antibiotic use has led to antimicrobial resistance (AMR) in MS strains because of these challenges, vaccination plays a central role in flock protection, lower bacterial shedding and prevent eggshell apex abnormalities in layers.

- **Prevention and Control:**

Prevention focuses on biosecurity measures, including sourcing MS-free breeders, controlling movement of personnel and equipment and minimizing stressors that predispose birds to infection. Integrated control combining vaccination, strict biosecurity, monitoring via serology or PCR and responsible antimicrobial use is essential to minimize economic losses, maintain flock health and reduce the risk of AMR development. Thus vaccination, combined with good biosecurity and management practices can controlMS spread, minimizing antibiotic relianceand maintaining flock productivity.

Stallen South Asia Pvt Ltd is offering a unique inactivated vaccine **MS-VAC**particularly against *Mycoplasma synoviae*.

- **Key Features of MS-VAC:**
  - The Only Vaccine Made from highly immunogenic strains of *Mycoplasma synoviae*
  - High titre (10^{10} CFU)
  - Oil adjuvant
  - High immunogenicity.
  - High safety, effective protectionand field compatibility
- Duration of immunity in MS-VAC

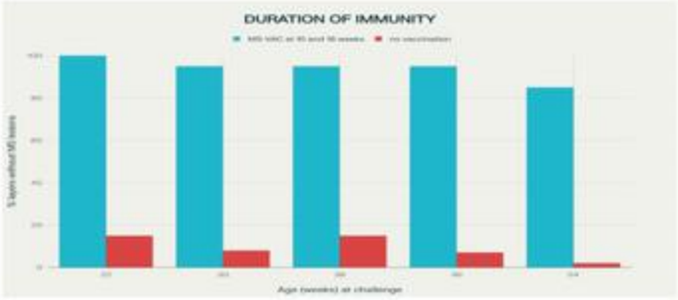
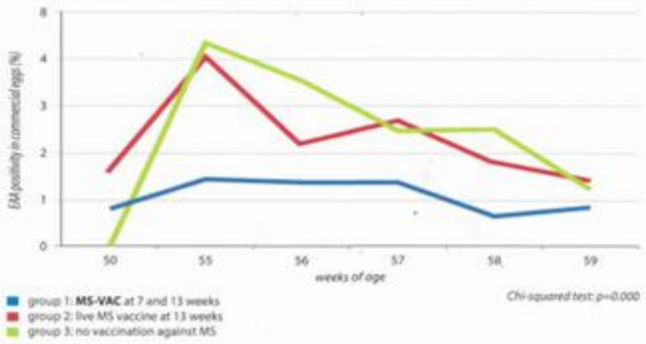


Fig. 5 Duration of immunity in MS-VAC
(3 weeks after challenging with virulent MS)

MS-VAC is a vaccine produced from highly immunogenic strains of *Mycoplasma synoviae*. The culture is inactivated and emulsified in light mineral oil, to ensure a high degree of protection after first vaccination, however the immunity is strongest and long lasting after second inoculation.

- Clinical observation of egg laid, in vaccinated and non vaccinated commercial hens, after infection by field MS.
- Field efficacy of MS-VAC against eggshell apex abnormalities (EAA)



A significantly lower (p=0,000) percentage of EAA affected eggs was observed in group 1 than in groups 2 and 3 (statistically significant difference for p<0.001).

Thus, MS-VAC proved to be effective in protecting commercial hens from EAA, significantly more than the competitors, in farms infected with MS.

Reference available on request

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ROSS 308 AP

BEST ACHIEVERS
SEPTEMBER-2025

Aviagen INDIA

Northern Region

COMPANY: Sampoorna feeds

FARMER NAME: Mr. Mandeep Singh Maan

SEPTEMBER-2025	Top #1
Farm Type	Closed Shed
State	PUNJAB
Chicks Placed	12073
Mean Age	35.3
Avg Body Wt	2566
FCR	1.391
cFCR	1.265
Livability%	96.8
Daily Gain	72.7
EPEF	505.7

Eastern Region

COMPANY: IB Group

FARMER NAME: Mr. Brajesh Patel

SEPTEMBER-2025	Top #1
Farm Type	Closed Shed
State	BIHAR
Chicks Placed	12113
Mean Age	38.0
Avg Body Wt	2686
FCR	1.429
cFCR	1.277
Livability%	97.8
Daily Gain	70.7
EPEF	483.9

Central Region

COMPANY: Jafpa

FARMER NAME: Mr. Prasad Ashokrao Fhalke

SEPTEMBER-2025	Top #1
Farm Type	Closed Shed
State	MAHARASHTRA
Chicks Placed	15770
Mean Age	34.9
Avg Body Wt	2631
FCR	1.363
cFCR	1.223
Livability%	97.1
Daily Gain	75.4
EPEF	537.1

South Region

COMPANY: IB Group

FARMER NAME: Mr. Avinash Reddy

SEPTEMBER-2025	Top #1
Farm Type	Closed Shed
State	ANDHRA PRADESH
Chicks Placed	22465
Mean Age	35.0
Avg Body Wt	2511.0
FCR	1.444
cFCR	1.330
Livability%	96.2
Daily Gain	71.7
EPEF	477.9

SEPTEMBER-Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North EC House	12073	35.3	2566	1.391	1.265	96.8	72.7	505.7
North Open House	2328	34.0	2393	1.342	1.255	96.3	70.4	505.1
East EC House	12113	38.0	2686	1.429	1.277	97.8	70.7	483.9
East Open House	2035	38.0	2565	1.324	1.198	93.8	67.5	478.0
Central EC House	15770	34.9	2631	1.363	1.223	97.1	75.4	537.1
Central Open House	3495	31.2	2271	1.383	1.323	97.5	72.8	512.5
South EC House	22465	35.0	2511	1.444	1.330	96.2	71.7	477.9
South Open House	5685	32.2	2160	1.390	1.354	96.7	67.1	466.4

SEPTEMBER-Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	CLOSED SHED	MAHARASHTRA	15770	34.9	2631	1.363	1.223	97.1	75.4	537.1
Flock 2	CLOSED SHED	MAHARASHTRA	14256	34.0	2474	1.345	1.239	95.7	72.8	518.2
Flock 3	CLOSED SHED	MAHARASHTRA	7794	32.8	2300	1.330	1.264	97.9	70.2	516.7
Flock 4	CLOSED SHED	MAHARASHTRA	10384	36.2	2700	1.364	1.209	94.4	74.7	516.5
Flock 5	CLOSED SHED	MAHARASHTRA	11785	31.8	2229	1.335	1.284	97.6	70.1	512.8
Flock 6	OPEN SHED	MAHARASHTRA	3495	31.2	2271	1.383	1.323	97.5	72.8	512.5
Flock 7	CLOSED SHED	MAHARASHTRA	14978	34.7	2572	1.369	1.242	94.6	74.0	511.5
Flock 8	OPEN SHED	MAHARASHTRA	5995	36.3	2684	1.400	1.247	96.6	74.0	510.4
Flock 9	CLOSED SHED	MAHARASHTRA	14078	32.6	2326	1.359	1.287	97.3	71.3	510.2
Flock 10	CLOSED SHED	MAHARASHTRA	11580	32.7	2293	1.341	1.276	97.5	70.2	510.0

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Aviagen India Strengthens Customer Support, Innovation

Leveraging a diverse local and global team to deliver long-term value across India's poultry industry

Aviagen® India is deepening its support for local producers through expanded expertise and continued investment in poultry health, performance, and innovation.

Led by Business Manager Dr. Ramakrishna Balasubramanian, the local team is dedicated to helping customers achieve optimal performance from their Ross® 308 AP flocks. By combining local insight with Aviagen's global expertise, the team delivers practical, results-driven support to meet the unique needs of India's poultry producers.

Global expertise strengthens Aviagen India team

As part of our ongoing focus on customer support and growth, we've strengthened the India team with broad expertise from our Global Technical Operations including:

- **Karthik Kesavan, Poultry Nutrition Specialist** - Based in Melbourne and originally from Chennai, Karthik advises customers across Asia Pacific and India on nutrition strategies.
- **Dr. Peter Chrystal, Regional Nutrition Manager APAC** - Peter helps producers and feed millers overcome practical and economic challenges while building long-term customer relationships.
- **Dr. Ruben Kriseldi, Poultry Nutrition Specialist** - With advanced degrees from Auburn and Arkansas, Ruben develops nutritional programs to optimize broiler and breeder performance.
- **Dr. Scott Dawson, Regional Technical Veterinarian** - A highly experienced poultry veterinarian, Scott supports producers across Asia in advancing bird performance health, and welfare. His international background includes workin the UK with Aviagen Ltd. in Scotland - home to one of only two of the company's global pedigree operations.
- **Jason Cormick, Incubation Specialist** - Jason brings decades of hands-on expertise in incubation and chick quality. After working in numerous areas of production, quality assurance, animal welfare and others his passion is still optimizing hatchery performance to produce quality chicks.

Seasonedteam members continue to support India:

- **Greg Hitt, Regional Technical Manager, Asia** - Since 2012, Greg has led Aviagen's largest customer service team in Asia, spanning India and the wider region.
- **Mike Block, Technical Service Manager** - Based in New Zealand, Mike provides hands-on broiler expertise and uses remote service and data tools to reach more customers.
- **Dr. Shantanawar, Senior Technical Service Manager** - With 26 years of experience, he delivers training and on-farm support to improve breeder and grandparent performance.
- **Dr. Sivakumar, Senior Technical Service Manager** - A veterinarian with 25 years' experience, he advises on disease prevention, biosecurity and health management across all generations.
- **Mr. S. Sivakumar, Technical Service Manager** - Bringing over 15 years of expertise in breeder and parent stock management, he helps customers optimize ventilation and chick start-up.
- **Mr. Eswaran, Senior Hatchery Manager** - With 21 years' experience, including 13 at Aviagen India, Eswaran provides practical solutions to improve hatchery results and chick quality.

Together, this expanded team of dedicated professionals combine global know-how with local insight to provide Indian poultry producers with practical, science-based support at every stage of production. Their work builds on a strong foundation of progress. Learn more about these inspiring, dedicated professionals by visiting Aviagen India.

Breeding success in India since 2009

Aviagen began operations in India in 2009 and from 2016 onwards the Ross® 308 AP broiler breeder has played a key role in advancing the local poultry industry. To further strengthen the supply chain, Aviagen India recently upgraded all 14 breeder production houses with advanced air filtration systems — reinforcing biosecurity and ensuring a secure, continuous supply of quality breeding stock.

Dr. Ramakrishna Balasubramanian, Business Manager for Aviagen India, explains: "We're constantly working to improve bird health and performance through global research and development. The Ross 308 AP's continually improving livability, feed conversion, and adaptability are essential to our customers' success and to providing families across India with healthy, affordable chicken."

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Body Weight [R.O.1 => 1:3
Optimum -[1250-1300 GM] BODY WEIGHT
with Omega 3 Booster@1 Lit/Ton from 5th to 17th Week
Omega 3 also recovers body weight very fast after any VIRAL disease.
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Vit D3: 1 Million IU/KG (Approx.)
Vit E: 1 Million IU/KG (Approx.)
Energy In Omega 3 Booster
9000 K. Cal/KG (Approx.)
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A perfect combination of Natural Essentials Oil Mentha x Piperita, Pinus sylvestris, Eucalyptus Globus, Basil & Oregano in proper proportion.

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SWANON RESPIRATORY DISEASE GONE

DOSAGES :
- Poultry : 2ml/10 lit of drinking water for 3-5 days.
- Fogging : 10 ml / 10 lit of water once/twice in a week
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Prestarter : 15 to 20 ml/100 Birds
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Toxicity Control Treatment :
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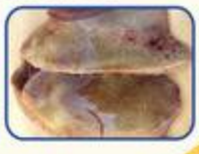
IBH 15-20 ML / 100 BIRDS IN BROILER

BREEDER 20-25 ML/100 BIRDS

In Layer (5 to 7 days)
Layer Chicks : 15 to 20 ml/100 Birds
Grower : 15 to 20 ml/100 Birds
Layer : 15 to 20/100 Birds
Toxicity Control Treatment :
Double the Dose

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

I B H



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Dr. Balasubramanian emphasized that Aviagen India is dedicated to supporting customers throughout every stage of production—from site visits to on-farm troubleshooting, from tailored workshops to one-on-one consultations.

"We're planning a new series of training programs, so stay tuned for more details," he shared. "These will include both multi-customer workshops on topics important to our local growers, as well as customized knowledge sharing sessions designed for individual needs. Whether customers are raising birds in open-sided houses or navigating hot and humid conditions or feed form and nutritional challenges, we're here to help improve both bird welfare and business outcomes."

Looking ahead to Poultry India Expo

The Aviagen India team looks forward to meeting producers at **Poultry India Expo 2025** this November in Hyderabad to discuss how the Ross 308 AP can bring value to their operations — and how Aviagen can support success at every stage of production. Reach out to the Aviagen India team to set up a meeting by visiting the website Info Center | Aviagen .

About Aviagen

Since 1923, Aviagen® has been recognized as a preferred global poultry breeding company. Its mission is "Breeding Success Together" with its valued customers, supporting these global chicken producers in their crucial endeavor to supply sustainable, affordable and nutritious protein to communities worldwide. Committed to driving positive change in the poultry industry, Aviagen implements efficiencies that not only make commercial chicken production environmentally and socially responsible, but also economically beneficial to producers. Their holistic approach focuses on simultaneously enhancing flock performance, health and welfare, while ensuring food safety and security by upholding the highest biosecurity standards.

To meet varied market demands, Aviagen offers a full portfolio of breeding stock under the Arbor Acres®, Indian River® and Ross® brand names. The Rowan Range® and Specialty Males® target slower-growing and other niche market needs. Aviagen is based in Huntsville, Alabama, US., with operations across the UK, Europe, Turkey, Latin America, India, Australia, New Zealand, Africa and the US, and joint ventures in Asia. The company employs close to 8,000 people, and serves customers in 100 countries.

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Bentolians Celebrate World Egg Day 2025 Across India, Linking Nutrition Advocacy with a Rising Egg Economy

Bentoli AgriNutrition India Pvt. Ltd. commemorated World Egg Day 2025 with coordinated engagements at orphanages and old age homes nationwide, spotlighting "The Mighty Egg: Packed with natural nutrients" as a complete, accessible nutrition source for children, women, and elderly people while aligning outreach with India's rapidly expanding egg sector. Teams conducted interactive, local-language sessions emphasizing that eggs deliver high-quality protein and essential micronutrients supporting growth, immunity, and healthy aging.

"World Egg Day reminds us that simple dietary choices can unlock big health dividends," said Dr. Jayanta Bhattacharya, Director-Technocommercial, Bentoli. As India's egg sector grows in scale and sophistication, daily egg consumption becomes an even more practical pathway to better growth, cognition, and healthy aging in communities we serve. The celebrations featured interactive sessions on incorporating eggs into everyday meals, along with lively discussions on their role in promoting satiety and healthy weight management—reinforcing eggs as an affordable, nutrient-packed food suitable for all ages.

The initiative's focus on vulnerable groups reflects Bentoli's commitment to science-led nutrition education and community wellbeing, complementing India's sectoral progress and the global recognition of eggs as a cornerstone of sustainable, affordable protein supply. Observed annually on the second Friday of October, World Egg Day underscores the benefits of eggs across ages and cultures, aligning with Bentoli's mission to promote evidence-based, culturally relevant nutrition practices.

About Bentoli

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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ARTICLE

Smart Solutions for Reliable Enzyme Recovery in Post-Pellet Applications

Zack Ng, Senior Scientist
zack.ng@abvista.com | AB Vista

Post-Pellet Liquid Application (PPLA) is a widely adopted practice in feed mills for applying liquid enzymes after the pelleting process, helping to prevent thermal inactivation and preserve enzymatic activity. Once enzymes are applied, the first and most critical quality control step is to verify the applied dose by measuring enzyme recovery in the finished feedbefore making any process adjustments or equipment recalibrations. This article outlines key considerations for accurate enzyme quantification, including enzyme storage stability, statistically sound sampling protocols, and intra-laboratory consistency checks - all essential for ensuring data integrity and method robustness.

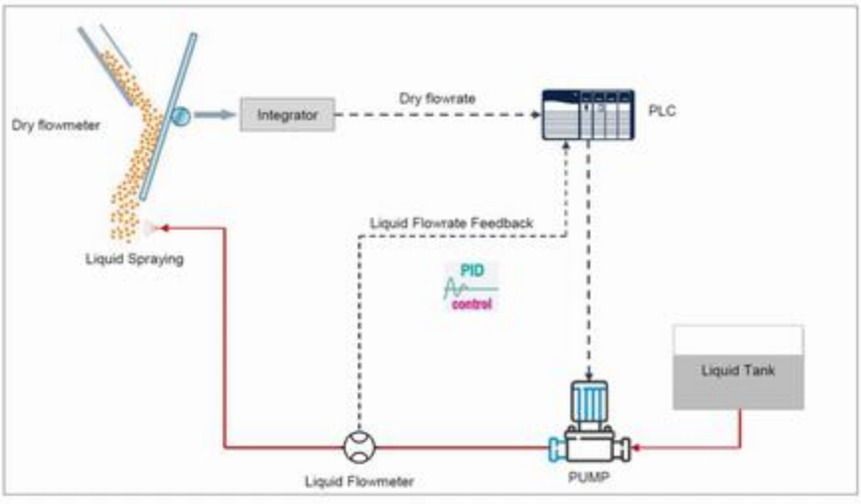

Figure 1. A typical Post-Pellet Liquid Application system

Follow Your Enzyme Supplier's Recommended Storage conditions

Proper storage of liquid enzymes is essential to preserve their catalytic activity and ensure consistent in-feed performance. Enzymes such as phytase and xylanase should be stored within the recommended temperature range - typically between 4°C and 23°C - according to product specificationsand protected from light exposure and microbial contamination. For enzymes held in intermediate storage tanks, pH stability must be maintained to prevent hydrolytic or oxidative degradation. Routine monitoring of storage parameters, including temperature and pH, is recommended to safeguard enzyme stability prior to application.

Get Sampling Right to Get Recovery Right

After applying the enzyme, the main quality control step is to evaluate how much of the enzyme is retained in the final feed product.To capture within-batch variability, it is recommended to collect approximately 10 feed samples per production run (around 200¤ g each), strategically sampled across the batch - such as from bags 1 to 2 during the first shift, bags3 to 5 during the second shift etc. Since one production batch can yield at least 10 bags, the sampling can be spread across different production shifts to better represent the entire batch.Additionally, submitting a retained sample of the liquid enzyme used during the feed application allows for verification of enzyme integrity and stability throughout the process.

Accurate Enzyme Recovery Starts with the Right Test

At AB Vista, enzyme verification is conducted using proprietary in-house ELISA (Enzyme-Linked Immunosorbent Assay) methods specifically developed for our phytase (Quantum Blue) and xylanase (Econase XT) products. These assays are optimized for high specificity, minimizing cross-reactivity and reducing the risk of false positives. Compared to conventional wet chemistry methods, ELISA offers advantages in speed, cost-efficiency, and operational simplicity - making it well-suited for routine quality control. For each feed sample, two independent extractions are performed, and each extract is analysed in duplicate, yielding four data points per sample (Figure 2). The data are subjected to statistical evaluation, including coefficient of variation (CV%) checks, to ensure intra-sample consistency before final reporting.

For feed mills equipped with on-site laboratories, ELISA methods can be readily implemented with minimal instrumentation and training. For facilities without in-house testing capabilities, AB Vista offers both regional and global laboratory services, along with support for ELISA method setup, validation, and operator training. Additionally, AB Vista supplies QuickStix™ kits- easy-to-use test strips designed for the rapid detection of phytase or xylanase activity in feed (Figure 3). These qualitative test strips provide quick user-friendly screening results within 15 minutes, serving as a practical first-step tool prior to more detailed quantitative analysis.

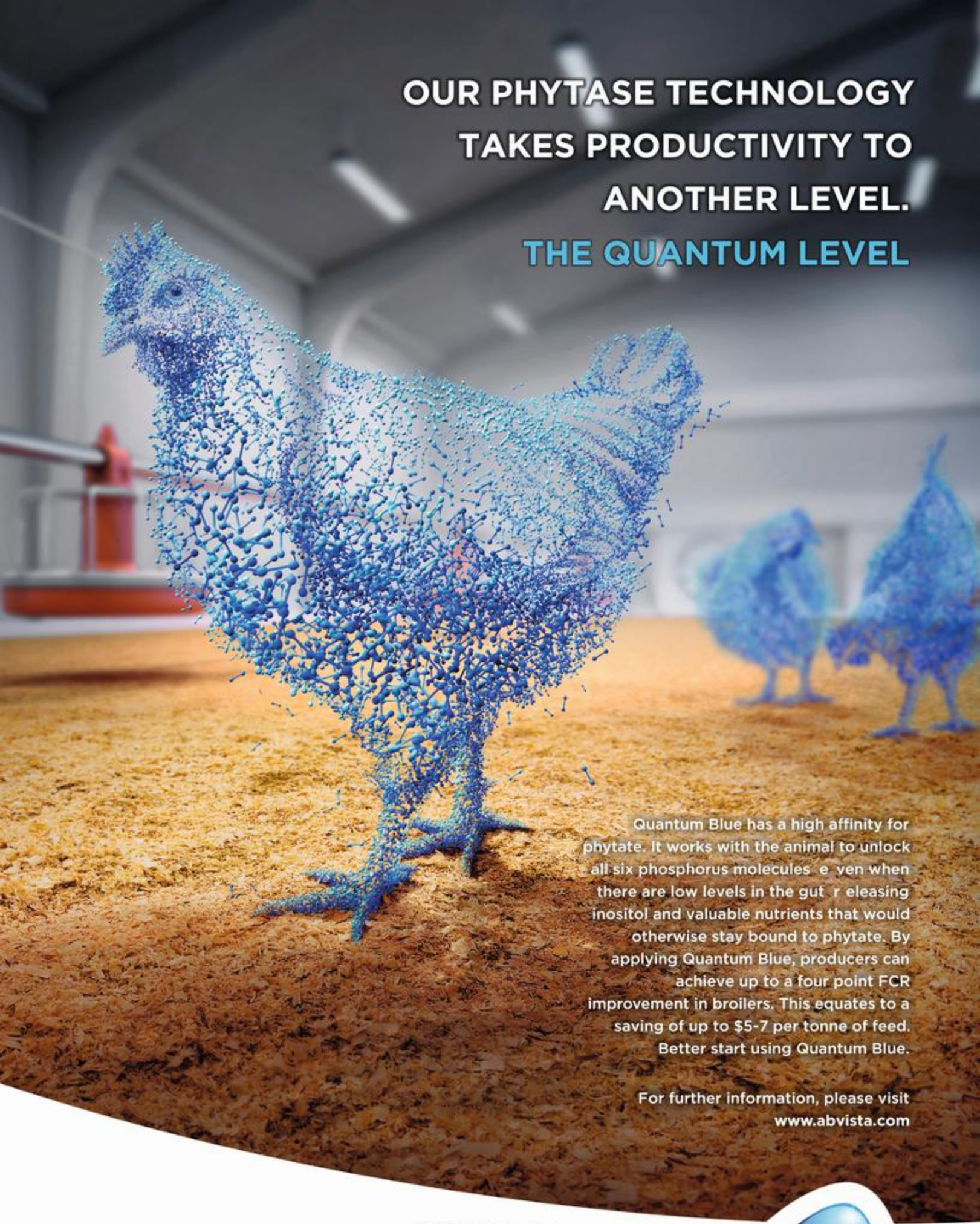

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Figure 2. ELISA workflow for enzyme recovery analysis.

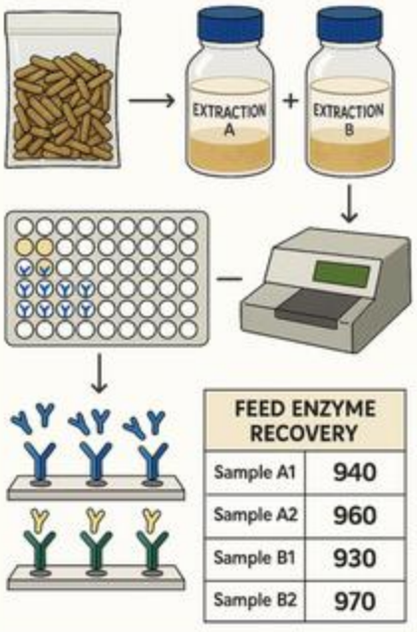

Figure3: Example of a QuickStix™ test which can detect the presence of phytase or xylanase in feed samples.

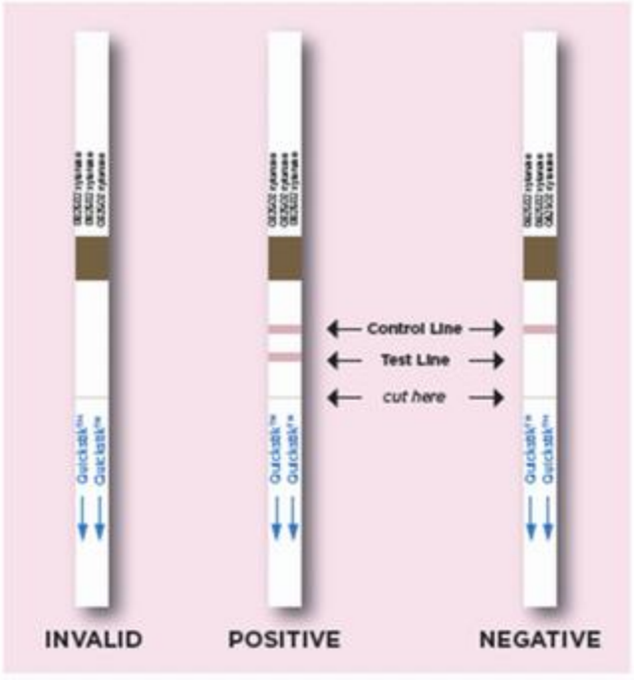

Table 1: Example enzyme recovery results from 10 feed samples collected during the same PPLA production run.
Note: The numbers provided are examples only and are not drawn from actual measurements.

Sample description	Expected Activity	Laboratory Results
Liquid Enzyme product Lot XXXXXX	Min. 5,000 FTU/g	6500 FTU/g
Sample 1	1000 FTU/kg	1050 FTU/kg
Sample 2		890 FTU/kg
Sample 3		950 FTU/kg
Sample 4		980 FTU/kg
Sample 5		1100 FTU/kg
Sample 6		1090 FTU/kg
Sample 7		1200 FTU/kg
Sample 8		1120 FTU/kg
Sample 9		990 FTU/kg
Sample 10		920 FTU/kg

Interpretation of enzyme recovery results may vary between customers, depending on internal quality assurance protocols and acceptable tolerance thresholds. At AB Vista laboratories, each feed sample is treated as an independent analytical replicate, with reporting based exclusively on the experimentally measured values. This approach ensures objectivity, eliminates bias from assumptions or adjustments, and supports transparency and confidence in the reported enzyme activity data.

Conclusion

Post-Pellet Liquid Application (PPLA) remains one of the most effective methods for preserving enzyme activity during feed production. However, achieving accurate dosing goes beyond application - it requires proper enzyme storage, well-designed sampling protocols, and reliable testing methods. Tools such as ELISA and QuickStix™ provide feed mills with reliable and easy-to-use methods for checking enzyme recovery.At AB Vista, we are committed to supporting the industry with the products, tools, and expertise needed to ensure enzymes are applied consistently and correctly - batch after batch.

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T: +62-21-30027458; 30027459

CONTACT

Mr. Arun Kumar | +91 9901916554
arunkumar@famsungroup.com

Mr. Ashutosh Mohapatra | +91 93382 16272
ashutosh.mohapatra@famsungroup.com

Mr. Shelby | +91 74167 12555
lxb@famsungroup.com

The Hidden Threat of Aflatoxins in Poultry Feed: Risks, Impacts, and Solutions

Madri Brink
Global Technical Manager, Orffa Additives B.V.

Mycotoxins are the most prevalent natural contaminant in food and feed. These secondary metabolites are produced by different types of filamentous fungi, commonly found in agricultural products. The presence of mycotoxins in crops and feed poses a significant challenge for poultry producers globally, as they can impair animal performance, lead to feed waste, and ultimately reduce profitability. It is impossible to produce a mycotoxin-free feed as mycotoxins are invisible and are characterized by their thermal stability. Therefore, it is crucial to apply solutions that can counteract in-feed mycotoxins and mitigate risk to animals.

Aflatoxins - A Hidden Risk

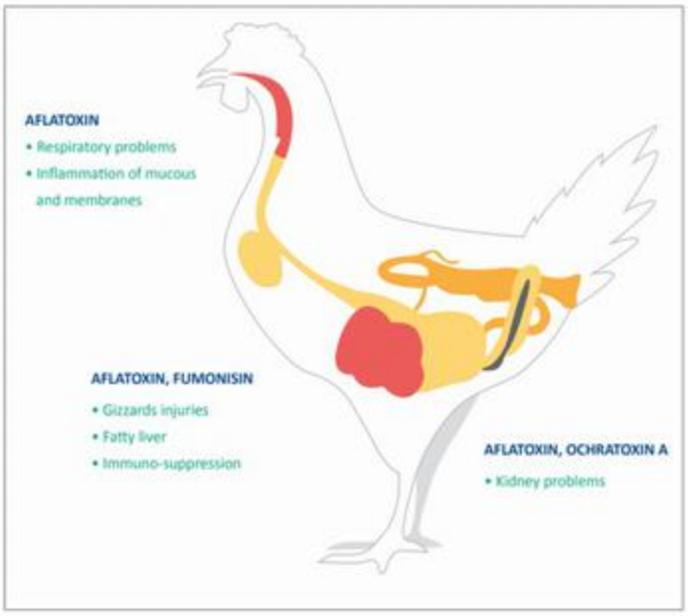
In South Asia, aflatoxins in particular present an extreme risk. Aflatoxins are produced by different species of*Aspergillus*. These fungiare the most common contaminants of maize, a widely used ingredient in poultry feed. While the climatic conditions in the region promote the growth of aflatoxin-producing fungi during crop growth and post-harvest storage, Asia's fragmented farming systems and informal feed supply chains further contribute to the contamination risk. In a recent survey, it was found that about 57% of animal feed samples in Asia were contaminated with aflatoxins. Among the different types of aflatoxins produced, the most important are B1, B2, G1, G2 and M1 due to their toxic and carcinogenic properties. Chronic exposure to even low levels of aflatoxins can have significant negative effects on animal health.In addition, aflatoxins in animal feed also pose health risks to humans through the consumption of contaminated animal products such as meat and eggs, further underlining the need for effective mitigation solutions.

The Impact of Aflatoxins on Poultry Health and Profitability

Aflatoxins exert both clinical and subclinical effects on poultry, including:

- **Digestive tract damage**: these toxins can cause mucosal lesions and disrupt gut health, impairing nutrient absorption.
- **Liver damage**: aflatoxins are hepatotoxic, leading to fatty liver, inflammation, and even fibrosis.
- **Immunosuppression**: birds exposed to aflatoxins exhibit reduced disease resistance and weaker vaccine responses.
- **Economic losses**: lower growth rates, egg production, processing yield, reduced feed efficiency, reduced fertility and hatchability, and increased mortality, which result in substantial financial losses for producers.

Exposure to a single mycotoxin such as aflatoxins can already negatively affect the health and productivity of poultry. However, the co-occurrence of mycotoxins in feed is the rule rather than the exception, which can lead to synergistic or additive toxic effects. A recent study by Kolawole et al. (2025) indicated that broilers fed a mycotoxin contaminated diet, even at levels below EU regulatory limits, had a decrease in feed efficiency of up to 10.8% and an increase in feed consumption of 10.9%. This translates into an additional feed cost of €214,600 per year or ₹2,20,09,591 per year.



Clinoptilolite: A Natural Solution for Aflatoxin Mitigation

To counter the threat of aflatoxins, producers are increasingly turning to clinoptilolite, a natural sedimentary clay mineral. Its honeycomb-like crystalline structure and high cation exchange capacity allow clinoptilolite to function as a molecular "trap," selectively and specifically adsorbing mycotoxins like aflatoxin B1. The mineral's natural negative charge attracts positively charged toxins, binding them within its pores and preventing their absorption in the gastrointestinal tract. This mechanism ensures toxins are safely excreted, reducing their harmful effects.

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In an *in vitro* study by the CALF lab of the National Dairy Development Board (NDDB) in India, Excential Toxin A showed aflatoxin B1 binding of up to 97.62%. Another*in vitro* study was set up by the Centre of Excellence in Mycotoxicology and Public Health at Ghent University in Belgium. Within this study, Excential Toxin A was tested for its binding capacity (%) to the main types of aflatoxins (AFB1, AFB2) via LC-MS/MS. The binding capacity was analysed at pH 3 and 7, simulating the stomach and small intestine, respectively. The binding capacity to the respective mycotoxins is expressed as follows: complete binding ("+++">90%), partial binding ("++">50%; < 90%), limited binding ("+">10%; <50%) and no significant binding ("0"<10%). **Excential Toxin A** was shown to completely bind AFB1 and AFB2 at both pH levels(Table 1). These results suggest that Excential Toxin A can offer a high degree of protection against the four most important aflatoxins.

Table 1 Binding capacity of Excential Toxin A to the most important aflatoxins

Aflatoxin	Binding capacity of Excential Toxin A
AFB1 pH3	+++
AFB1 pH3-7	+++
AFB2 pH3	+++
AFB2 pH3-7	+++

A 35-day broiler study carried out atKasetsart University in Thailand has shown that**Excential Toxin A**, a natural source of clinoptilolite, supports immunity and liver health in broilers challenged with aflatoxin B1. A total of 1,200 day-old broilers (Ross 308) were divided into five treatments: negative control (NC), positive control (PC, with 50 ppb aflatoxin B1), and three groups receiving the PC diet dilutedExcential Toxin A (TA) at 1.0, 2.5, and 5.0 kg per ton of feed. The birds were vaccinated against Newcastle Disease (at 7 and 21 days of age) and Infectious Bronchitis (at 7,14, and 21 days of age).

Key Findings (Table 2):

- **Performance:**Supplementing broilers with 5 kg/ton ofExcentialToxin A did not negatively impact broiler performanceas indicated by the final body weight, growth, feed intake, and FCR. This indicates that the product selectively binds aflatoxins and none of the essential nutrients.
- **Mortality:** Reduced mortality ratein groups receiving 2.5 and 5 kg ofExcential Toxin A.
- **Immunity:**Significantly improved (P<0.001) the Newcastle Disease (ND) antibody titerwhen birds were fedExcential Toxin A.
- **Liver Health:**Liver histopathology scores tended to be improved in the treatments supplemented with Excential Toxin A (P = 0.07), indicating reduced aflatoxin damage.

In summary, the supplementation ofExcential Toxin A, a source of clinoptilolite,in aflatoxin-contaminated feed can support immunity and liver health in broilers without negativelyaffecting productivity.

Safeguarding Poultry Health with Excential Toxin A

Aflatoxins in poultry feed are a hidden yet significant threat to animal health and farm profitability. Successful mitigation requires regular monitoring, proper storage practices, and the use of effective mycotoxin binders such as clinoptilolite. Excential Toxin A is a natural source of clinoptilolite with proven aflatoxin binding properties. It is authorized for all animal species and allowed to be used in feed for organic production. By staying vigilant and proactive against aflatoxin contamination, producers can protect their flocks, businesses, and consumers from the risks posed by mycotoxins.

Table 2 Performance, antibody titer and liver histopathology scores of broilers fed Excential Toxin A when challenged with aflatoxin B1

Treatment	Final Weight (kg)	Weight Gain (kg)	Feed Intake (kg)	FCR	Mortality Rate (%)	ND Titer	Liver score
NC	2.37	2.33	3.63	1.56	1.67	2.20^{a}	2.06^{y}
PC	2.38	2.34	3.66	1.57	2.50	2.24^{a}	2.19^{y}
PC+1 kg TA	2.37	2.33	3.68	1.58	2.50	2.42^{bc}	1.56^{x}
PC+2.5 kg TA	2.39	2.35	3.66	1.56	1.25	2.36^{c}	1.44^{x}
PC+5 kg TA	2.36	2.32	3.70	1.60	1.25	2.47^{c}	1.88^{xy}
P-Value	0.940	0.941	0.891	0.172	0.580	0.001	0.073

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Pulling day-old Chicks:
The Right Moment to Remove Chicks from the Hatcher

Rafael Lozano

Hatcheries play a key role in poultry production by delivering top-quality day-old chicks that set the foundation for strong performance on the farm. One crucial factor influencing chick quality is the timing of their removal from the hatcher. Getting it wrong can lead to more second-grade chicks and higher first-week mortality. This article summarizes essential tips to help determine the optimal chick pull time.

Why pull time and post-hatch conditions are both critical

Pulling chicks at the right time is keyto givingthem the **best possible start in post-hatch life**. But timing alone doesn't guarantee quality: the conditions new-born chicks are exposed to while waiting are just as important. If they stay too long in the hatcher under poor conditions, their quality and welfare suffer. And once removed from the hatcher, other factors come into play. Fluctuations in room pressure, washing of nearby machines... all can introduce extra stress and contamination risks.

That is why it is vital to **recognize the right timing indicators and stay alert to environmental conditions while chicks are waiting**. Only then can hatcheries truly optimize their operations and improve outcomes.

Pull time vs.hatch window

It is essential to **distinguish between pull time and hatch window**.The term 'pull time' (or 'take-off') refers to the moment in time when hatchery operators remove the trolleys with new-born chicks from the hatcher. The term 'hatch window' refers to the time range between the hatching of the first and last chicks.

	Pull time (Single moment)	Hatch window (Time range)
What	The moment hatchery operators remove the chicks from the hatcher	The period between the first and last chickshatching
Why	Important to choose the optimalmoment: pulling at the right time enhances chick health and quality	Important to assess the hatch window spread:a narrow hatch window leads to more uniform chicks
How	• Observing physical indicators and behaviour • Checking wing feathers for excessive growth • Examining eggshells for meconium stains	• Counting hatched chicks at specific time • Estimating the hatch window by assessing embryonicstage uniformity at transfer • Analysing the humidity curve during the hatching phase
Impact	Better chick comfort, stronger performance at farm level, lower first-week mortality	Better flockuniformity, which is beneficial duringthe entire growing phase and at slaughter

How to choose the optimal timing for pulling chicks?

Sometimes hatcheries determine pull time based on chick delivery schedules and logistics. However, this clock-based approach can severely impact chick health, qualityand performance on the farm. The decision to pull should be **based on biological signals**, not planning - for example by reading the hatch peak signal from the humidity curve. Once the vast majority (80-90%) of expected chicks have hatched,**humidity inside the hatcher reaches its peak**. From that moment, **pulling should happen within the next 8 to 16 hours.** This gives the last chicks time to dry and mature enough to move on to the next stage. Occasionally, a few late chicks may still be slightly wet when pulling starts - ideally no more than 5% with a damp neck (see also point 1). But waiting any longer, under unstable conditions, puts the earlier chicks at risk and compromises overall chick quality.

A **practical way** to assess the right timingfor pulling chicks - without disturbing the hatching process- is to **look through the hatcher door windows about 24 hours before the scheduled pull time**. Ideally, 1% to 5% of the chicks should have hatched at that point. From there, it is expected that the majority - around 80% to 90% - will have hatched by the time the humidity curve reaches its peak. This typically happens 12 to 16 hours after the first 1% to 5% of chicks have hatched.

1. Physical indicators and behaviour

Chickappearance and behaviour during pull-out are valuable indicators of potential issues. If the timing was **correct**, nearly all chicks should be **active, standing, dry and fluffy.** Their legs should appearwell-hydrated and shiny. Occasionally, a few (less than 5%) may have slightly damp necks - but none should be completely wet.

If chicks were held **too long**, signs of stress may appear, especially in suboptimal room conditions. You can expect to see **loud, hyperactive chicks** that may have already used up their yolk reserves. When environmental stress pushes them into **survival mode**, you will see **panting chicks with dry legs due todehydration.**

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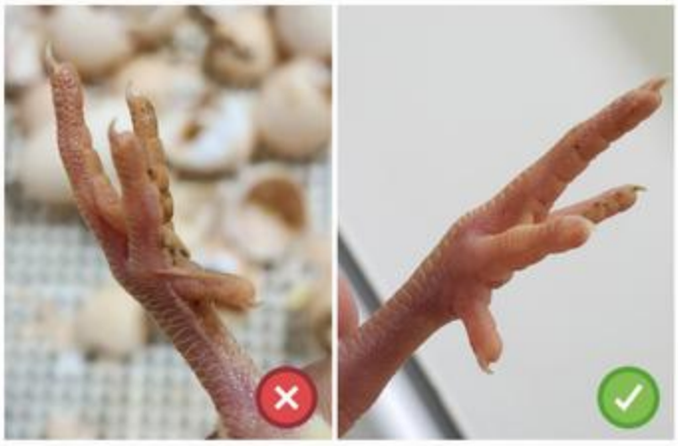

Left: A dehydrated chick leg - rough and dry. Right: A hydrated chick leg - shiny and well-moisturized.

2. Wing feather growth

Normal feather development is a sign ofhealthy chick development duringincubation. However, if many chicks show **excessive wing feather growth**, it usually indicates theyhatched too early and stayed in the hatcher for too long.

Left: The feathers show excess growth ('white triangles'). Right: Normal feather development.

3. Meconium score

Hatch debris should contain an **acceptable level of meconium**. Excess meconium residues on eggshells indicate that chicks remained in the hatcher too long before being pulled. A quick assessment involves **scoring eggshells from 1 to 5**- ideally with most around score 3. Scores 2 and 4 are also acceptable. But if many shells score 1 or 5, the setting time needs adjustment: start 2 to 4 hours earlier in case of score 1, or 2 to 4 hours later if score 5 dominates.

What are the consequences of an incorrect pull time?

When chicks are pulled **too early**, they may be classified as second-grade quality because they are not completely dry. It takes4 to 6 hours after hatch for a chick to dry and become active. The hatching process demands a lot of energy and after this, they need time to recover from the effort made. If pulled too soon, they may also not be mature enough, which affects their growth and survival on the farm.

When chicks stay**too long** in the hatcher, they are morelikely to be exposed tovariable and suboptimal conditions. This increases the risk of dehydration, which can lead to a systemic failure in their basal metabolism - negatively affecting growth and feed efficiency during the flock's later life.

In summary

The timing of pulling day-old chicks from the hatcher is crucial for their health, overall quality and performance on the farm.The idealpull timeis**around 8 to 16 hours after the humidity peak**. At that point, the chicks should have **positive physical indicators, no signs of excessive wing feather growth,a meconium scoreof 3, and less than 5% with damp neck feathers.** Understanding these indicatorsand recognizing that it is very challenging to keepchicksunder optimal conditions inside the hatcherand during waiting times can make a real difference in producing strong and healthy chicks.

Technology can offer valuable support in maintaining the right conditions after hatch. Petersime's HatchScan™ technology controls the ambient temperature directly in the hatcher baskets after the intense hatching process, ensuring the environment is ideal for the chicks to feel comfortable until trolley pull-out. For chick holding, Petersime's Chick-Store machine creates a controlled climate that safeguards chick health and welfare, enabling hatchery managers to adjust transport schedules without compromising chick quality. Please don't hesitate to contact us for more information.

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39th edition of SPACE 2025 organised from September 16 to 18, 2025 at the Rennes Exhibition Centre, in Rennes, western France, a leading livestock-producing region in Europe was a grand success. SPACE Exhibition is a premier platform for professionals across the poultry, dairy, swine and aquaculture sectors to explore and discussadvancements in animal farming. SPACE 2025 Exhibition featured over 1230 exhibitors from 40 countries and 1,02,000, visitors from 125 countries showcasing innovations across 11 sector-specific halls and a 16-hectare outdoor exhibition area. **Mr. Didier Lucas, the new President of SPACE, highlighted the show's role as a bridge between innovation and the future of sustainable livestock farming.**

Ms. Ane Marie Quemener, General Commissioner of SPACE, emphasized the exhibition's mission to address global challenges in animal farming while strengthening international collaboration. Ms. QUEMENER, added that the efforts and hard work by SPACE Team has given excellent results.

At NU.ANCE Biotechnology booth, I had good meeting with Dr. Nemanja Todorovic, Chief Business officer, NU.ANCE Biotechnology is specialised in development and commercialisation of innovative feed additive products, merging expertise in technical and scientific knowledge. **Mr. Joginder Singh, Uppal, Business Director, is very efficiently heading the NU.ANCEB Biotechnology business in India and other South Asian Countries.**

During SPACE Exhibition, it was nice to meet and interact with **Dr. Bernhard Eckel, Vice President-Sales, Dr. Eckel Animal Nutrition GmbH & Co. KG, based in Niederzissen, Germany.** Over the past three decades,Dr. Eckel has grown from a family business into a globally recognized provider of alternative feeding solutions and has become one of the global leaders in sustainable animal nutrition.

Ms. Cecile Berthier, International Press and Exhibitors Information, highlighted the importance of giving visibility to such innovations, enabling exhibitors to gain recognition and enhance global reach. Poultry and Dairy Farms visits were also arranged for the international visitors. SPACE 2025 is fostering innovation, collaboration and growth within the global livestock and poultry sectors.

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At Biochem booth I had good interaction with Mr. Niels Otto Damholdt, Sales Director, Biochem. The Company headquarter is located in the northwest German town of Lohne, supplying high quality feed additives for poultry and livestock. **Dr. Bhaskar Choudhry is heading the Biochem business in India which has good growth in terms of volumes and sales.**

It was nice to meet **Mr. Xavier Cadiou, CEO of Agri Reseaux International and VIV worldwide partner for France at his booth during SPACE 2025**. Mr. Cadiou updated that he is working on the participation of French companies at VIV Select India 2026 being organised at Yashobhoomi, New Delhi, from April 22-24, 2026.

Amandine Leroux, International Development, SPACE, reiterated the importance of building meaningful international partnerships through knowledge-sharing and collaborative discussions. The International Club being supported by Bretagne Commerce International, Business France, and BPI France, has provided adedicated space for international visitors and exhibitors to do networking, conduct business meetings and explore partnership opportunities.

Tailored farm visits also being organized for international delegates said Ms. Chloe Letellier, Communication Press, SPACE. During SPACE 2025, I attended conference and symposia on poultry and livestock, covering topics such as environmental assessment in poultry farming, dairy farming, aquaculture and the application of artificial intelligence in livestock and agriculture. These sessions provided actionable insights and practical solutions tailored to the evolving needs of the agricultural sector.

At Aviagen booth, I met Mr. Florian Blevin, International Commercial Manager SSA, Aviagen Limited and had good interaction.

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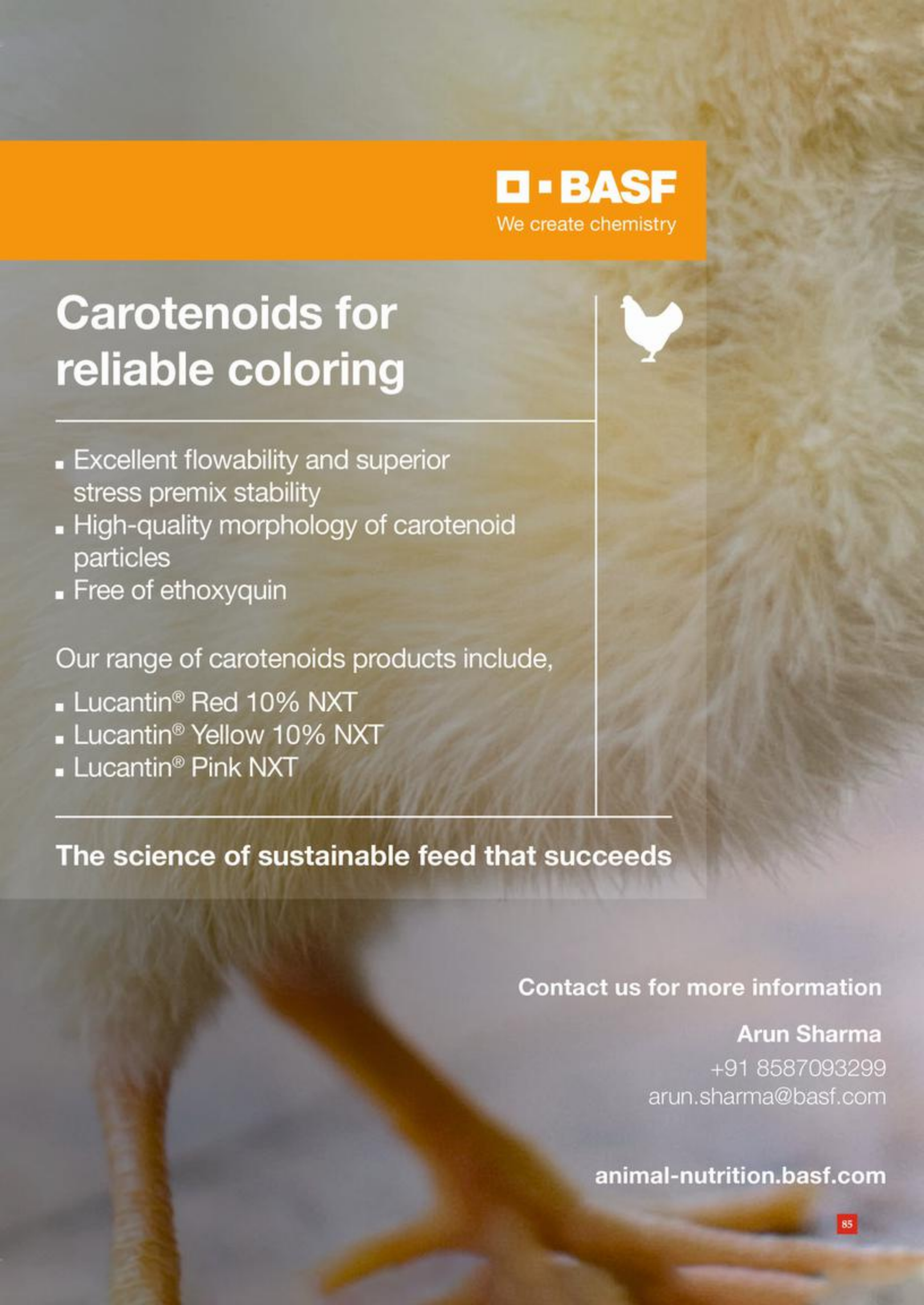
Adding value to nutrition

At Novogen booth, I had good interaction with Mr. Stephane Lemoine, Director, Business Development, Novogen along with Mr. Vaibhav Aghi, Director, Aghi Group, Dr. SK Bhardwaj and other delegates from India. AGHI Group's Easy Poultry Innovation LLP has partnered with global poultry genetics leader Novogen to introduce the Novogen layer breed in India from 2026, marking a significant milestone for the country's poultry sector. Mr. Vaibhav said their collaboration with Novogen aims to provide Indian farmers with a high-performing layer bird known for excellent laying persistency, uniform egg quality, and efficient feed conversion. Combining Novogen's global expertise with AGHI Group's local network and farmer-focused approach, the partnership seeks to drive sustainable, profitable, and high-quality egg production in India.

One of the International visitor visiting the show, said "As a key platform for international trade, SPACE emphasizes energy conservation, bio-security, and veterinary advancements, making it indispensable for professionals from Poultry and Dairy Industry, globally. It's truly the "Livestock Planet."Another International visitor said great success at SPACE Exhibition! Inspiring innovations, valuable connections, and unforgettable experiences. Glad to know that SPACE Exhibition exceeded expectations! Thanks to organizers, exhibitors, and visitors especially a large content of Indian visitors for making it happen. While interacting with exhibitors, they rated SPACE as very high quality trade show. In the evening attended the Reception organised by SPACE for the Press and their VIP delegates which was addressed senior officials of SPACE Team. **The next edition of SPACE is scheduled for September 15-17, 2026, at the Rennes Exhibition Centre, Rennes, France.**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IPEMA–Poultry India Holds its 18th Annual General Meeting at Taj Deccan, Hyderabad

The *18th Annual General Meeting (AGM) of the Indian Poultry Equipment Manufacturers' Association (IPEMA-Poultry India)* was successfully held at **Taj Deccan, Hyderabad**, under the chairmanship of **Mr. Chakradar Rao**. The meeting brought together the members of *IPEMA-Poultry India* to review the association's progress and outline future goals for the poultry sector.

The session included the **presentation of the Annual Report** by President **Mr. Uday Singh Bayas**. In his address, he highlighted IPEMA's impactful contributions over the past year, emphasizing its leadership and collaboration in advancing India's poultry sector through numerous national and international initiatives.

During 2025, IPEMA-Poultry India demonstrated strong industry stewardship by co-hosting major conferences such as the *Livestock and Poultry Development in North East India*, the *Poultry Conclave in Raipur*, and *The Poultry Summit in Chandigarh*. The association played a pivotal role in fostering innovation, education, and sustainability through technical seminars, academic conclaves, and international partnerships.

Notably, IPEMA was recognized as the **"Top Industry Catalyst"** at the *Exhibition Excellence Awards 2025*, underscoring its national impact. Expanding its global and national footprint, IPEMA welcomed collaborations with **19 International Associations** and **3 International Government Delegations**, while strengthening ties with **39 National Supporting Associations**—including 12 new members this year. The association also enhanced its media presence through partnerships with **15 magazines globally**, extending its communication and outreach efforts.

The **audited accounts and financial report** were presented by **Mr. Natarajan Ramasamy, Secretary**, and **Mr. M. Srikanth, Treasurer**, followed by discussions on the roadmap for the upcoming year, including preparations for the *17th Poultry India Expo 2025*.

A special highlight of the evening was **Ms. Jasvinder Kaur of Karamsar Poultry Pvt. Ltd., Delhi**, unveiling the **memento of the 17th edition of Poultry India Expo 2025**, symbolizing the association's ongoing legacy of excellence and innovation.

By **popular demand**, the **current office bearers and working committee** were **re-elected for the new tenure**, reaffirming members' confidence in their leadership and vision for the industry's future.

Office Bearers for the Current Tenure:

- **Mr. Uday Singh Bayas** - President
- **Mr. Natarajan Ramasamy** - Secretary
- **Mr. M. Srikanth** - Treasurer
- **Mr. Shripad Ketkar** - Joint Secretary

This was followed by the introduction of the IPEMA staff and an update on the plans and roadmap for the upcoming **17th edition of the Poultry India Expo 2025.**

The members shared a unified vision of making **Poultry India an even stronger and globally recognized brand**, through innovation, collaboration, and excellence in organization and participation.

The AGM concluded with **closing remarks and a vote of thanks** by the President, reiterating the association's collective commitment to driving the **growth, innovation, and sustainability of India's poultry industry.**





Curtain-Raiser: 17th Edition of Poultry India Expo 2025

Powering Global Poultry Innovation

IPEMA

The much-awaited 17th Edition of Poultry India Expo 2025 began with its Curtain-Raiser National Media Gathering on Monday, 6th October 2025, at Hotel *The Park*, Parliament Street, New Delhi.

The event was presided over by Mr. Uday Singh Bayas, President, IPEMA-Poultry India, along with senior members of IPEMA – Mr. Anil Dhumal (Founder President) and Mr. M. Srikanth (Treasurer). The gathering brought together leading national media professionals to set the stage for South Asia's biggest poultry exhibition.

Distinguished Guests

The occasion was graced by eminent personalities from across the poultry sector, including:

- Dr. Tarun Shridhar,Senior IAS officer (Rtd), Director General-ICFA, Former Sec -AHD, GOI
- Dr. P. K. Shukla, Senior IAS officer (Rtd), President, IPSA, Ex. Jt. Commissioner, Poultry, GOI
- Mr. Ramesh Khatri, Chairman, PFI
- Dr. Ravinder Reddy, Secretary, TPBA
- Mr. Divya Kumar Gulati, Chairman, CLFMA
- Mr. Naveen Pasuparthy, President, KPFBA
- Mr. Nawab Ali Akbar, President, UP Poultry Farmers Association
- Mr. B.S Rana,IPJA
- Dr. Santosh, Secretary, VIP
- Dr. S. P. Singh, General Manager, VHPL, Chandigarh
- Mr. S. S. Lakra, General Manager, VHPL, Noida
- Mr. Tata Bhavani Shankar, Manager, NECC, Noida
- Mr. Nikesh Gupta, Deputy General Manager, NECC, Ambala
- Mr. Praveen Nain, Vice President, BBAN
- Mr. Suresh Chetturi, Managing Director, Srinivasa Farms Pvt. Ltd.
- Ms. Raja Mani, Director, CII

Their presence and insights added immense value to the event, offering deep perspectives on the role of the poultry sector in ensuring food security, supporting rural livelihoods, and promoting sustainable agricultural growth and making cost effective protein availability in India.

As Mr. Uday Singh Bayas emphasized:

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NOVUS and Kasetsart University Open Dedicated Broiler Research Unit
New facility supports research and talent development in Southeast Asia

Thanks to a cooperative enterprise with the NOVUS team in Thailand, Kasetsart University currently has a new Broiler Research Unit, located at the Animal Science Learning Center at the Department of Animal Science, Faculty of Agriculture at Kamphaeng Saen, Kasetsart University, Kamphaeng Saen Campus. The facility is designed to generate high-impact research and practical insights for broiler producers operating in tropical environments across Southeast Asia.

While the facility is open to research collaborations with any industry partners, NOVUS specifically supported its development to help expand the intelligent nutrition company's capability to validate nutritional technologies in the region. NOVUS has previously partnered with Kasetsart University on research trials for CIBENZA® Enzyme Feed Additives, MINTREX® Bis-Chelated Trace Minerals and NEXT ENHANCE® 150 Feed Solution in real-world conditions, reflecting the genetics, management styles, and climatic challenges unique to the region.

"This is a significant milestone in how we support our customers in Thailand and Indochina," says NannapasMoonsap, Regional Sales Director - Thailand and Indochina, NOVUS. "Local broiler producers are navigating a rapidly changing production landscape. With this facility, we can partner more closely than ever before to create science-based solutions tailored to their operations."

The unit was launched in collaboration with the Department of Animal Science at Kasetsart University, Kamphaeng Saen Campus, one of the region's most respected agricultural institutions. The facility will support commercial-scale trials and student engagement, blending applied research with academic development.

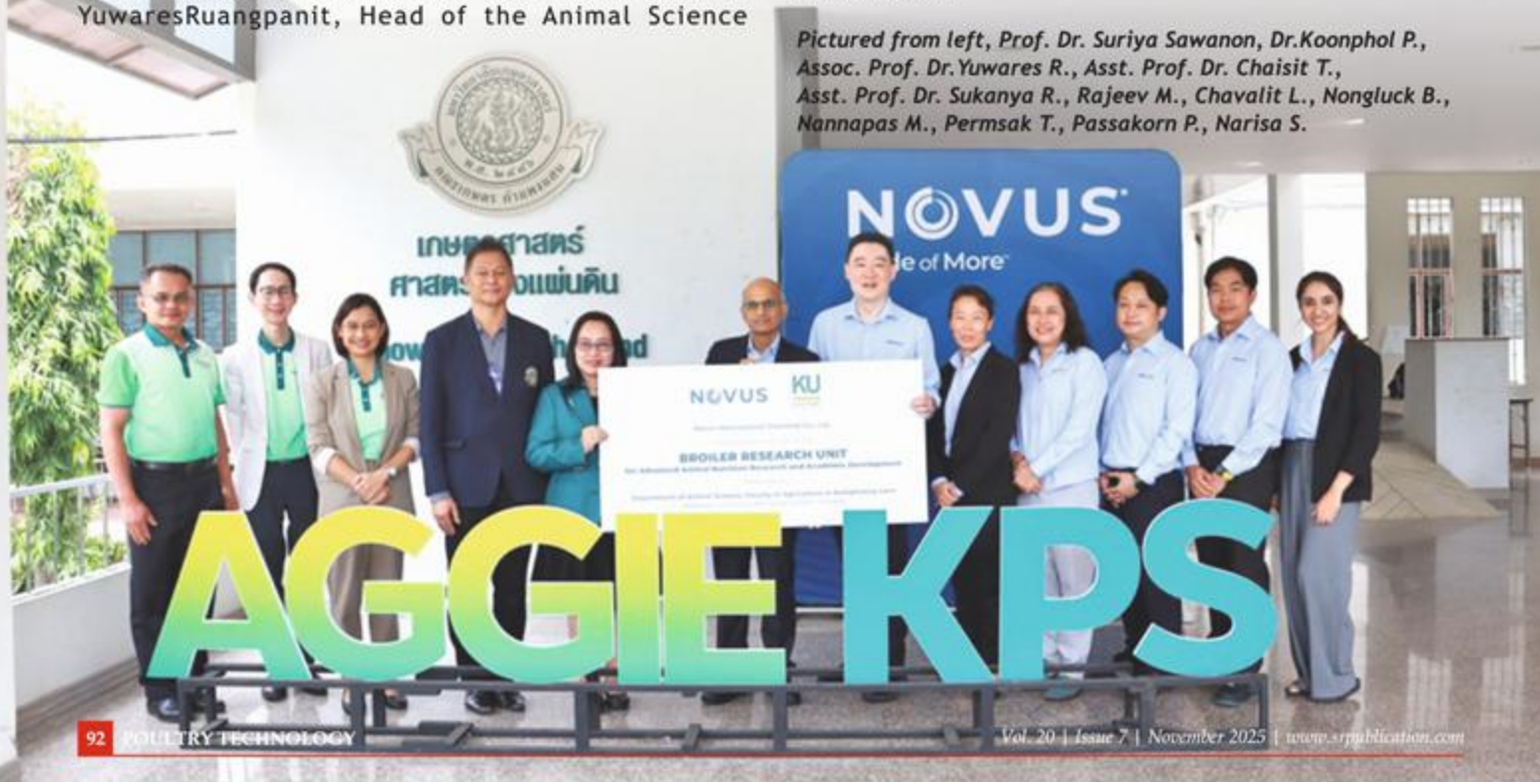
"This partnership with NOVUS aligns well with our vision to train students in modern poultry production systems that meet evolving industry needs," says Assoc. Prof. Dr. YuwaresRuangpanit, Head of the Animal Science Department, Kasetsart University, Kamphaeng Saen Campus. "By conducting trials with real-world relevance, students gain exposure to meaningful, hands-on learning, while the industry benefits from validated, localized insights."

The inauguration was attended by Asst. Prof. Dr. Sukanya Rattanatabtimtong, Assistant to the President for Research, Innovation and International Affairs, and Asst. Prof. Dr. Chaisit Thongju, Dean of the Faculty of Agriculture at Kamphaeng Saen. Their presence highlighted the significance of this initiative to Kasetsart University's mission, reinforcing the importance of international cooperation, academic leadership, and practical innovation in strengthening the future of poultry production. It also underscored the value of the long-standing partnership between NOVUS and Kasetsart University in driving forward science-based solutions for the industry.

The Broiler Research Unit is part of a larger Animal Science Learning Center that includes facilities for livestock and poultry production, a feed mill, pasture production, and laboratories. The Center is designed to reflect the complexity of modern animal agriculture while preparing the next generation of animal scientists and industry leaders.

"This is more than a facility — it's an investment in long-term capability," says Rajeev Murthy, Managing Director for Asia Pacific, NOVUS. "Whether it's gut health, nutrient efficiency, or environmental sustainability, we are committed to being a trusted partner in helping poultry producers thrive in this region."

NOVUS is the leader in intelligent nutrition, providing solutions for the animal agriculture industry. Along with a global network of experts, the company offers solutions for poultry that support eggshell and meat quality, gut health, and help birds reach their full potential. Learn more at novusint.com.



Pictured from left, Prof. Dr. Suriya Sawanon, Dr.Koonphol P., Assoc. Prof. Dr.Yuwares R., Asst. Prof. Dr. Chaisit T., Asst. Prof. Dr. Sukanya R., Rajeev M., Chavalit L., Nongluck B., Nannapas M., Permsak T., Passakorn P., Narisa S.

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

Sri. C. JAGAPATI RAO

Chairman, Srinivasa Farms

1. Please tell us something about your family background, your brought up and academic qualifications.

I am from an agricultural family hailing from a small village viz., Kulla situated on the banks of river Godavari in East Godavari district of Andhra Pradesh.

I did my elementary schooling in my own village, and I did my higher secondary schooling in Pamarru village, nearby my village (6th, 7th and 8th class). I moved to Rajahmundry for studying 9th, 10th and 11th class.

I did my Intermediate in Biological Sciences in Kakinada. I did my Graduation in Economics in Rajahmundry Further I did my post-graduation from Jadavpur University, Calcutta in International Relations in 1958-60, along with post-graduation I also did my law course.

I had applied for seat for master's degree in Glasgow University, England and I got the seat. Somehow or the other, I did not move to England. I had joined PH. D for some time in Delhi and studied for one year; married in 1961-elater on I discontinued After that I stayed back in my village looking after agricultural operations

2. When and where did you start your career and how and when did you enter into poultry industry

I came to know that the poultry business is growing in India in a big way. Keeping this idea in view, I moved to Hyderabad in 1965. I took an existing poultry farm for lease to start with, and after some time, I bought the land in Uppal village to start my own Poultry Farms or selling commercial eggs. With 10,000 Hy-Line birds I continued to run the busine s till 1971.

How was your experience with Late Dr. BV Rao and your role and contribution to VHPL. How did you get into various aspects, organisation etc in poultry industry? By 1971 1 developed friendly relation with Late B. V. Rao garu,, who was working with Arbor Acres then. I use to meet him whenever he comes to Hyderabad to sell chicks for his company, I started moving closely with him and we used to discuss about poultry business in India.

Meanwhile he moved to Hyderabad and started an Egg Farm - viz., Venkateshwara Poultry Farm in Emzal Village, near Hyderabad. After developing good relationships between us we started a business viz., Egg Bank and used to sell the eggs and we were also sending truckloads of eggs to Mumbai

Whenever we met we used to discuss as to how to start a Hatchery business. In 1971, Mr. William R Todd, who was Mr. BV Rao's Ex-Boss in Arbor Acres International, joined-in Bobcock, USA and was promoted as Vice President, Mr. Todd wrote a letter to Mn BV Rao offering a Bobcok grandparent franchisee for India. We immediately accepted his proposal. Initially we thought of promoting the company by two of us and later Mr. B.V. Rao decided to take another 2 persons and formed a group with Mr. BV Rao, myself, Mr. RK Soni and Mr. SB Thorat, an Architect from Pune and was a friend of Mr. BV Rao in Pune.

We all went to Mumbai to meet the Chairman of Union Bank of India and requested him to finance us and he agreed for our proposal to start a Hatchery at Hyderabad and another at Pune.

Meanwhile Mr. BV Rao's Poultry business was converted into a Private Limited Company and named it as Venkateshwara Hatcheries Pvt. Ltd (VHPL) Mr. RK Soni as Chairman, Mr. BV Rao, MD, myself as Whole-Time Director and Mr. SB Thorat as Director. We applied to Government of India for obtaining Import Licence to import Bobcock grandparents.

Accordingly, we obtained import licence and in January 1972 we imported 1000 grandparents, 6000 parents to be housed in Pune and another 3000 to be housed in Hyderabad. Meanwhile Mr. BV Rao moved back to Pune to oversee business operations all over India and


myself as a Whole-Time Director, I used to look after the operations of Andhra Pradesh. We started producing commercial chicks by 1972 end. From then onwards there is no look back our company's success story thus began. Later on, Venkateshwara Hatcheries also imported grandparents of Cobb vantress from USA.

In 1978 Mr. BV Rao offered me a sub-franchisee of Venkateshwara Hatcheries for 8 coastal districts of Andhra Pradesh for dealing with Bobcock layers and cobb broilers.

3. Were you confident of success with investment you made initially and poultry farming/business

I was very much confident of succeeding in poultry business when I initially took up the poultry business.

4. What are the milestones in your life/business.

Going to Calcutta to pursue my Post Graduation in International Relations from Jadavpur University. I Initially thought of going abroad to pursue my Masters in Business Administration, but I could not do so, as I felt that I need to help my family during 1960 - 1965 and looking after agricultural operations in my village. I was thinking deeply about economics of poultry farming and agricultural operations. I preferred poultry farming and chose to take up the same. As a result of this, I moved to Hyderabad in 1965 and took up Commercial Poultry Farming and poultry breeding business. This is my turning point /milestone in life

5. Are you satisfied with whatever you achieved in your life? and what are your actives now.

I am extremely satisfied with whatever I have achieved in poultry business which has grown me to this stage in life. Even though I am not taking any active part in the business at present, I would like to guide and encourage people to put in their best efforts for the success of the company and poultry on the whole.

6. Tell us few sweet memories in your life and business.

As a student I have lot of memories. Still some of my college friends- are in touch with me. I was very much enthusiastic when I discuss with co-students and friends about the affairs of the country. even as I student I used to help co-students who are not able to pay fee etc and derive lot of happiness of doing so. I felt so happy when my 3 children were born. My happiness increased when I started my own commercial poultry farm. I have lot of memories with late Dr. BV Rao garu. We used to meet and travel together very frequently and used to discuss about poultry affairs in the country. All the major decisions pertaining to the company were taken of the company either at breakfast and lunch and dinner time. I used to enjoy Mr. Late BV Rao's boldness and his inclination to mingle with everybody. I felt very happy when Mr. BV Rao sent me to USA for poultry technical training as I was the first person to be sent to USA in 1974 for technical training. I felt very happy when Mr. BV Rao offered me sub-franchise for 8 coastal districts of AP way back in 1978. I was very happy when my children and grand son took interest in poultry business and continuing the same.

7. Do you have any ambition for your son and your other children. Do you give him/them guidance in business?

I wish to see my son, daughter in law , grand son excel in their pursuits and become tremendously successful in running Srinivasa and be the cause to serve the nation by providing affordable nutrition to the people of this country.

8. What is daily routine now, before and during covid-19 pandemic? how do you spend your time daily (schedule)

Every day I wake up between 4 and 5 AM and began my day by speaking to my friends in USA for one hour, reading newspapers for couple of hours, doing some exercises for fitness, watching news on TV. I also spend time in talking to poultry unit heads on their activities, get updates and advise them if need be. At around 10 PM I retire to the bed.

Above is my schedule before COVID, during COVID and after COVID

9. What is your advice to the present generation stakeholders in poultry industry today?

My advice to the younger generation in Poultry Industry is to be sincere, diligent to their approach and working. In poultry, it requires lot of nurturing since it being a live-stock business. Poultry business needs relentless hard work, continuous upgradation of technology and dedication, which will pay rich dividends to the poultry industry.

10. I understand you made lot of study about Hy-Line layer breed and the company (Hy-Line International) behind it before choosing Hy-Line breed. Can you comment on this?

Hyline have in excess of 50% of world egg layer market and have always been very strong due to low feed per egg and also very high liveability, of course it was also known for its egg quality. I felt it was time when these factors will become more important for our Market, consumers will start demanding better size and internal quality eggs and farmers will demand more efficient bird, so with these considerations it was no brainer to go with Hyline

11. What are the priorities you feel to be done to establish and strengthen Hy-Line layer W-80 in India.

Th breeds advantages, of lowest feed per egg, best liveability, long lay cycle and easiest handling are obvious, now we are also matching HHE with other breeds and we are confident that we will lead this race too soon. Most farmers in our country have been measuring profitability as no of eggs per bird, strangely not taking a holistic look at HHE's, cost of egg production and quality of eggs. Due to this we, Srinivasa Farms, have to make farmers aware of, dynamics of how they profits are impacted and can be improved. As farmers start worrying more about the financial performance we feel W-80 will become they natural choice

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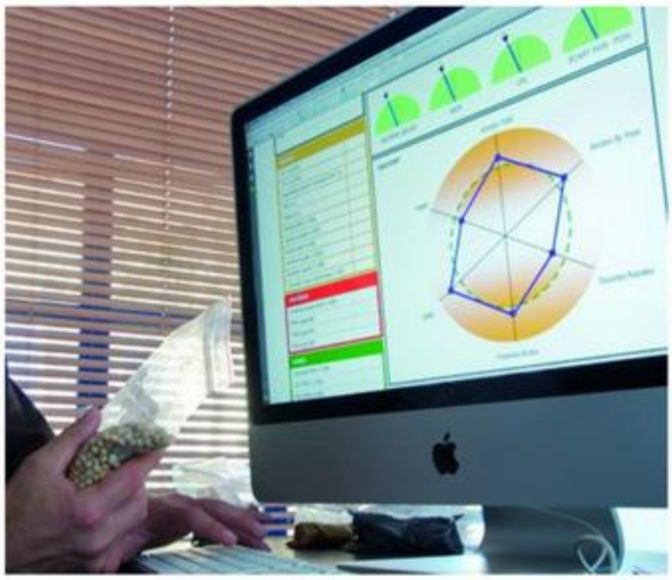
Evaluate precisely the nutritional values of raw materials to ensure livestock performance

A feed mainly consists of a mixture of raw materials. It is designed to satisfy an animal's requirements, depending on the animal's physiological stage or the market it is aimed at. Precise knowledge of the components making up that feed is essential for quantifying each of its ingredients. The ultimate goal is to achieve the technical and economic targets set by the market. In this context, how can one most appropriately estimate the nutritional value of these raw materials? What levels of energy and digestibility should be considered? How can one optimise the raw material values in one's formulation software?

Why is it necessary to estimate the nutritional values of the raw materials composing the feed?



Optimising each **feed** "recipe" or its "**formulation**" means that strict **nutritional and economic constraints** are respected. The feed miller offers a feed which must be sold at a reasonable price. This feed must also match the animal's requirements depending on species, age, physiological stage, and the final market it is intended for. It is essential that the **raw materials** used are accurately estimated so that under-performance (underevaluation) and economic waste (over-evaluation) are avoided. An **appropriate estimate** is a key factor for formulating nutritionally-adequate diets. This whole optimisation process should also allow for saving money on feed costs.

How can we characterise the nutritional values of raw materials in the matrix formulation?

Each **raw material** is estimated by means of chemical and nutritional criteria whose values are called nutrients. This characterisation is based on the analytical evaluation and expertise drawn from the relevant scientific literature and research data.

The standard analyses conducted in the laboratory are meant to provide the chemical values for each **raw material** considered according to parameters such as moisture, protein, fat, fibre, minerals... For a more thorough understanding of the composition of these raw materials, in-depth analyses need to be carried out. Aminograms are thus meant to provide the values for each of the amino acids considered.

The level of **energy** and **digestibility** also need to be properly determined (energy, amino acids, ...). These parameters are defined through calculations and **equations** stemming from nutritional expertise. This knowledge results from the compilation and synthesis of many trials that have either been conducted in Research Center or in farms, on all species: poultry, rabbits, pigs, and ruminants. To do so, results from the **digestibility** trials must be compared to the results obtained within actual rearing conditions. This stage is meant to validate the estimated initial values. Some nutrients can also be calculated via **predictive equations**. These have been established through the compilation of institutional research, reference tables, and experiences on livestock as described above.

All this work, derived from **matrix expertise,** will lead to defining nutritional norms for each species. When it comes to a specific species or subspecies, we can currently formulate feed based on the reference points of different **energy systems (digestible energy, metabolisable energy, net)**. The **amino acid** profiles of these species can now also accurately be assessed. This overall accumulated knowledge on raw materials, also referred to as 'precision nutrition", is ultimately designed to match the physiological requirements of animals with the nutrient content of the available ingredients. The raw materials thus characterised will eventually make up the "**table**" or **"raw material matrix"**. Depending on raw material origin, the manufacturing process, the supplier, and the production site, the content of this **matrix formulation** is likely to vary substantially.

With over 50 years of experience in animal nutrition, experts from the Techna Group assist feed manufacturers and professionals in the feed industry with their knowledge and selection of raw materials, as follows:

- Studies of technical-economic interest;
- Choice of suppliers ;
- Criteria to be considered for laboratory analysis.
- The Level of incorporation depends on the species, production targets...

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Antoine Rousseau
Senior global Poultry Expert
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CLFMA of India Delegation Strengthens U.S.-India Agricultural & Livestock Collaboration Through In-Depth Knowledge Exchange

- *The CLFMA of India delegation visited the United States to study sorghum, corn, and dairy farming practices and engage with top agricultural stakeholders.*
- *Meetings included live farm demonstrations, industry interactions, and discussions with senior U.S. officials, including the Governor and Agriculture Secretary of Iowa.*
- *The visit reinforces ongoing MoUs between CLFMA, the State of Iowa, and Maharashtra, promoting knowledge exchange and bilateral cooperation.*

The **Compound Livestock Feed Manufacturers Association (CLFMA) of India** successfully concluded a week-long delegation visit to **the United States**, marking a significant step in advancing international cooperation in agriculture and livestock feed. Invited by the U.S. Grains Council, the delegation, led by **Chairman Mr Divya Kumar Gulati**, engaged with policymakers, industry leaders, and farmers to explore best practices in sorghum (jowar), corn, and dairy production.

The visit commenced in **San Antonio, Texas**, where the delegation participated in a series of technical sessions led by experts from the **United Sorghum Checkoff Program, Kansas State University, Clemson University, and the U.S. Grains Council**. Discussions spanned global sorghum markets, grain standards, sustainable farming practices, and the role of sorghum in poultry, swine, and pet food diets. Sessions also highlighted efficiencies within the U.S. grain supply chain and emerging trends in global demand.

Next, the delegation travelled to **Amarillo, Texas**, to witness sorghum cultivation and processing firsthand. Visits included **Will Braack and Kathy Broman Farms, Joe Rohrbach Farms, and the Richardson Seed Company in Vega**. The program also featured a tour of **Myles Frische Farms and an engagement with Bunge in Etter, Texas**, offering an in-depth look at planting, harvesting, and supply chain operations. The Texas leg concluded with a debrief session hosted by the United Sorghum Checkoff Program in Amarillo.

In Iowa, the delegation explored the integrated grain-to-feed ecosystem through visits to **POET Bioprocessing facilities in Jewell and Shell Rock, as well as Mark Mueller's farm in Waverly**, where the team was hosted for a farmer-organized cookout. Additional stops included **Stuart Swanson Farms in Galt, the Gold Eagle Feed Mill in Eagle Grove, and Dutchland Dairy in Rolfe**, providing insights into ethanol production, feed manufacturing, and large-scale dairy operations.

The Iowa program culminated in strategic engagements, featuring a high-level meeting with the **Governor of Iowa at the State Capitol**, followed by discussions with the **Iowa Agriculture Secretary and members of the Iowa Corn Growers Association**. These interactions focused on agricultural policy, trade, and technology adoption, underscoring opportunities for long-term collaboration in livestock feed and dairy sectors.

This visit reinforces ongoing efforts under the **MoU signed between CLFMA and the State of Iowa (September 2024), and the sister-state agreement between Maharashtra and Iowa (August 2025).** Both frameworks aim to facilitate joint research, knowledge sharing, and adoption of sustainable practices in the livestock feed and broader agricultural sector.

Commenting on the visit, Mr Divya Kumar Gulati, Chairman, CLFMA of India, said, *"This visit provided invaluable insights into advanced agricultural practices, particularly in sorghum, corn, and dairy production. With India's animal feed market valued at approximately USD 14.34 billion in 2024 and projected to reach USD 21.02 billion by 2034,[1] the need for sustainable and efficient feed solutions is paramount. Engaging with U.S. counterparts has highlighted the importance of knowledge exchange in addressing challenges such as feed shortages and productivity gaps. By adopting proven practices and fostering international collaboration, we aim to enhance the sustainability and competitiveness of India's livestock sector."*

The CLFMA delegation included:

- Mr. Divya Kumar Gulati, Chairman
- Mr. Abhay Shah, Deputy Chairman
- Mr. Abhay Parnekar, Deputy Chairman
- Mr. Nissar F. Mohammed, Honorary Secretary
- Mr. R. Ramkutty, Treasurer
- Mr. Sameer Chotai, President - East Zone
- Mr. Sumeet Surekha, Deputy Chairman
- Mr. Suresh Deora, Immediate Past Chairman
- Mr. Naveen Pasuparthy, Deputy Chairman

Through direct engagement with U.S. farmers, industry representatives, and policymakers, the CLFMA delegation reinforced India's commitment to sustainable agricultural practices, livestock feed innovation, and international collaboration

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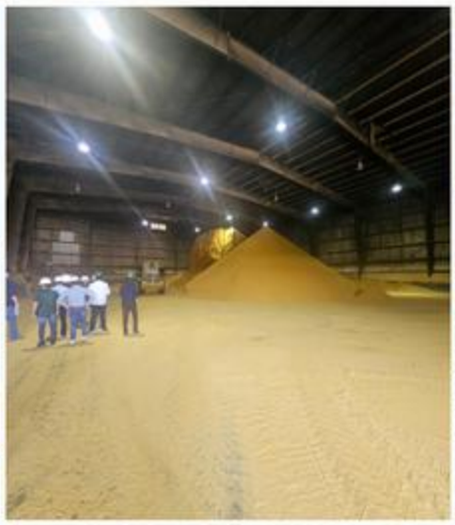






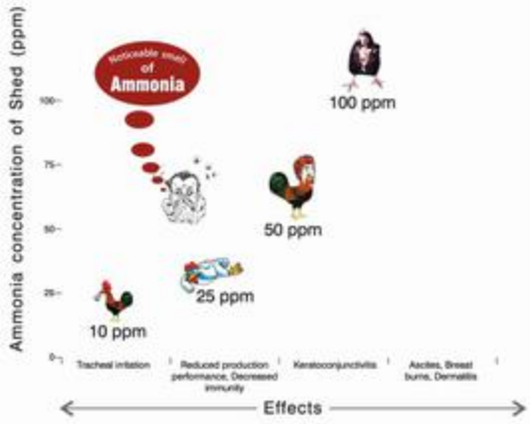







AmmoFree Premix

Natural ammonia binder



Ammonia menace and welfare concern in poultry houses

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- For enhancing the level of beneficial gut microflora and to reduce disease susceptibility especially intestinal and respiratory diseases.
- For better farm productivity and profitability.

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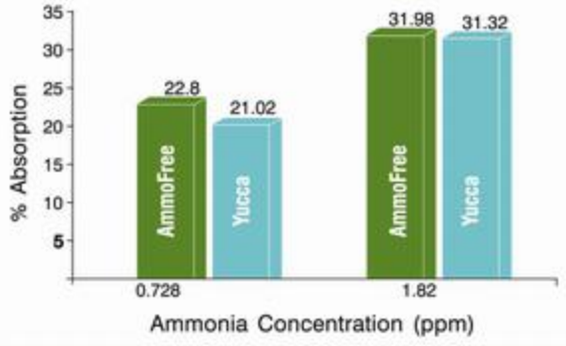
Effect of AmmoFree and Yucca extract on absorption of ammonia



Effect of AmmoFree* at broiler farm in winter (14° - 15°C) with noticeable ammonia concentration

Group	Livability (%)	Birds showing respiratory discomfort	Faecal NH3 (g/kg dry faeces)	
			Day 21	Day 42
Control	95.00	7	3.86	3.92 (+1.55%)
AmmoFree 200g/ton	96.67	X	3.95	2.71 (-45.75%)

Trial at Commercial Poultry Farm under technical guidance of Dr. Rama Subba Reddy

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New Technical Service Manager Brings Wealth of Knowledge to Asia

With over 10 years at NOVUS and a lifetime of experience in the agriculture industry, David Sanchez Torres is bringing his expertise to Asia as the new senior regional technical services manager in Asia; based at the regional office in Bangkok, Thailand.

In this role, he works with the technical and commercial teams as they help customers meet their goals through solutions that optimize overall performance, support gut and structural health, enhance reproductive capability, and provide advice on strategic nutrition programs.

Until recently, Torres coordinated the diverse technical services team throughout North and South America as NOVUS's senior regional technical services manager for the Americas.

With expertise in feed formulation, poultry nutrition, mineral and enzyme nutrition, and calcium and phosphorus metabolism, Torres is ready to help customers solve on-farm challenges by connecting his knowledge with their business potential.

"I'm excited about the opportunity to join the Asia team. I've followed NOVUS's strong presence and significant growth potential in the region, and I'm eager to contribute," Torres says. "Joining this team allows me to leverage my experience from the North and Latin American markets, sharing insights and strategies that can be valuable to the Asia team's innovative initiatives. It's clear that this region is at the forefront of our industry's advancements, and NOVUS's commitment to helping every animal meet its growth potential through intelligent nutrition is a mission I am passionate about."

Senior Director and Managing Director of Asia Pacific Rajeev Murthy says bringing Torres from the Latin American team was the right choice for professional and personal reasons.

"David has been with NOVUS for over 10 years, supporting customers in the Americas. He has deep expertise in our product platforms, especially in minerals and enzymes. Asia is a high-growth market for NOVUS and our customers and technical team will benefit from his expertise," he says. "At the same time, Asia is very diversified in terms of production systems and cultures; this will enrich David's professional development journey."

Prior to joining NOVUS, Torres served as regional manager and product leader in Latin America for Alltech, Inc., and international technical manager at Premex, Inc.

He has a degree in animal science from Universidad de La Salle in Colombia, a master's degree in animal nutrition from University of Viçosa in Brazil, and a business degree from the University Industrial Santander in Colombia. He is a member of the Asociación Colombiana de Médicos Veterinarios y Zootecnistas Especialistas en Avicultura (AMEVEA).

To learn about the intelligent nutrition solutions Torres is using to help animals in Asia meet their growth potential, visit novusint.com.

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Venkateshwara B V Bio-Corp Pvt. Ltd.

organised Technical Seminar on"Layer Management & Nutrition with Eggxtra 5% Composite Premix" in Bangladesh

Venkateshwara BV Bio-Corp Pvt. Ltd. India andNature CareManufacturing Industry Ltd. Bangladesh organized Technical seminars for commercial Layer Farmers onTuesday07th October, 2025 at Chattogram, Bangladesh. This technical seminar was attended by layer farmers of Chattogram and surrounding area.

Dr Sanjay Deshpande,Venkateshwara BV Bio-Corp Pvt Ltd was spoken for the seminar and explained in detail about the **"Commercial Layers Management"** in all aspects and Importance of balanced nutrition to improve productivity in commercial layers with optimization of production cost. He explained how **Venkys 5% Eggxtra Composite Premix** provide very easy solution to produce the balanced feed for commercial layers as per the requirement of birds. During his presentation, he advised to be watchful about quality parameters to be considered while selecting the different feed ingredients. The excerpts from his presentation can be summarized as below.

- Importance of brooding management as a foundation for preparing better pullets.
- Importance of body weight monitoring in rearing period and its impact on laying productivity.
- Benefits of good uniformity for good egg production and consistency as well.
- Early Laying Nutrition to maximize peak production.
- Benefits of Phase feeding - to reduce the overall egg production cost and to provide the nutrients as per requirement of the birds age, egg production, egg weight, egg shell quality etc.
- Importance of Water Management and its impact on gut health.
- Maintaining the egg shell quality during post peak production period.
- **5% Eggxtra Composite Premix** is an innovative Premix helping to produce balanced feed in an easy and simple way. It also helps to avoid the errors occurring during weighing, batching and mixing processes of feed production.
- **5% Eggxtra Composite Premix** is capable of optimizing the cost with highest efficiency at farm level.

Dr Sanjay Deshpande answered the queries of the attendees related to the subject and other technical queries regarding Farm Management and Vaccination Program.

The Technical Seminar was attended by around **25** Layer farmers surrounding the Chattogram Bangladesh area.

Mr Md Mahabub Alam, Sales Manager, Nature Care proposed vote of thanks to all. The local Nature Care and Venkys Team, **Dr Faiz Khan Rakib**, Technical Manager (sales)Venkys India Ltd, Bangladesh organised this technical seminar.

VIV Select China moves to Shanghai for the 2026 edition

Following the remarkable success of VIV SELECT CHINA 2025 in Nanjing, the premier livestock industry exhibition is making a strategic move to Shanghai for its 2026 edition, signaling a new chapter of expanded global reach and enhanced industry connectivity.

VIV SELECT CHINA 2025 (Nanjing) took place September 10-12 at the Nanjing International Expo Center (Jianye District). This edition featured 485 leading exhibitors from the Netherlands, Germany, Brazil, the United States, Canada, Spain, Turkey, Vietnam, Thailand, India, Malaysia, and other key markets, showcasing over 30,000 m² of exhibition space.

Nearly 30 leading enterprises—among them Nxin Digital Intelligence, Yukou, Xingyi, China Animal Husbandry, Sunhy, Tecon, Zhejiang Medicine, Eppen, Hengyin, Sunson, Jinxiang, Unisplendour, Wanhua Chemical, and Lukang—returned with their latest innovations.

Visitor registrations covered 108 countries and regions and totaled to 16,863, of which 2,357 were international attendees. The event also welcomed more than 2,000 conference attendees and 400+ industry leaders, as well as 10 domestic and international industry organizations that attended as delegations, bringing together global livestock elites in Nanjing for this landmark industry event.

Building on this tremendous success, show organizers VNU Europe and Globus Events have officially announced that VIV SELECT CHINA 2026 (Shanghai) will be held in Hall 1 of the Shanghai World Expo Exhibition & Convention Center, running August 19-21, 2026. It will carry the theme "Connecting the Globe, Building a One-Stop Livestock Trade Platform" and will fully leverage its global resources and strong influence to drive the comprehensive strategy in the country.

Jeroen van Hooff, Royal Dutch Jaarbeurs President & CEO said, "Bringing VIV Select China to Shanghai is a natural step forward. Across the VIV portfolio, we choose key cities that serve as gateways for their regions: Bangkok for Asia, Abu Dhabi for the Middle East, New Delhi for India, Utrecht in the Netherlands for Europe. Shanghai now takes its place on our map.

Shanghai is not only a global hub for business, but also a place where international and Chinese markets meet every day. By moving the show here, we are giving our partners and exhibitors the best stage to connect, exchange ideas, and grow together. It's about creating the right setting for international collaboration, and Shanghai offers exactly that."

Edwin Tan, CEO of Globus Events, remarked, "VIV Select China has always been committed to serving as a platform for Sino-foreign cooperation in the livestock industry—helping Chinese livestock enterprises go global while supporting overseas companies in establishing themselves in the Chinese market. The relocation of VIV Select China 2026 back to Shanghai marks a milestone, taking the platform's internationalization to a new height. As an international business hub, Shanghai enables VIV Select China to better fulfill VIV Worldwide's mission of integrating industry resources and to further promote the deep integration of China's livestock technologies with global markets."

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Natalie Taylor, VIV Select China Project Manager shared, "What impressed me most at VIV Select China was the energy on the floor. You could see both local and international exhibitors sitting down with professional attendees and decision makers, having the kind of conversations that open doors to real business. It wasn't just about showing products, it was about making those connections. And now, with the move to Shanghai, the centre of China's business world, this exchange will only become stronger, creating even more opportunities for global collaboration. We are all very excited on what comes next!"

Relocating to Shanghai: Strategic Upgrade with a Global Vision

Shanghai, one of China's gateways to the world and a major international trade center, offers unparalleled Asia-Pacific connectivity, mature exhibition infrastructure, and a business-friendly environment. Exhibitors and professional visitors will benefit from more efficient, high-quality matchmaking experiences, enabling Chinese livestock enterprises to seize global opportunities and deepen industry-chain collaboration. Building on Shanghai's metropolitan strengths and the Yangtze River Delta livestock cluster's momentum, the event will witness a comprehensive upgrade in size and content, becoming a central hub for global livestock exchange, trade, and innovation.

Co-located with Pet Fair Asia - Dual Exhibitions, Mutual Empowerment

From August 19-21, 2026, VIV SELECT CHINA (Shanghai) will run alongside Pet Fair Asia (August 19-23). Organized by the same host, the two venues lie just 15 minutes apart, with complimentary shuttle buses to ensure seamless access to the full livestock and pet industry chains. The events will also feature world-class conferences on animal disease prevention and treatment, covering common and cutting-edge topics for large and small animals, and host interactive exchange programs for students and professionals from agricultural and veterinary institutions. With three core strengths—full industry-chain coverage, international resource integration, and a tailored service ecosystem—the dual exhibitions will build an efficient bridge between the livestock and pet sectors.

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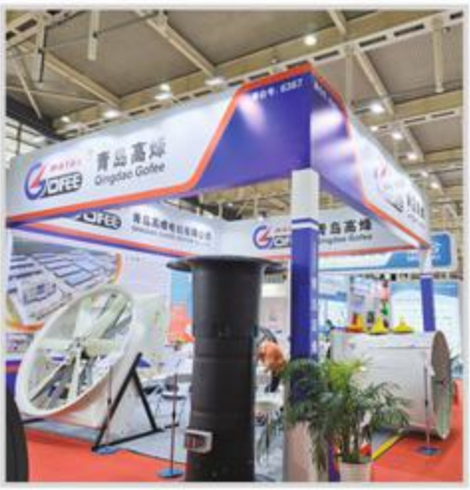
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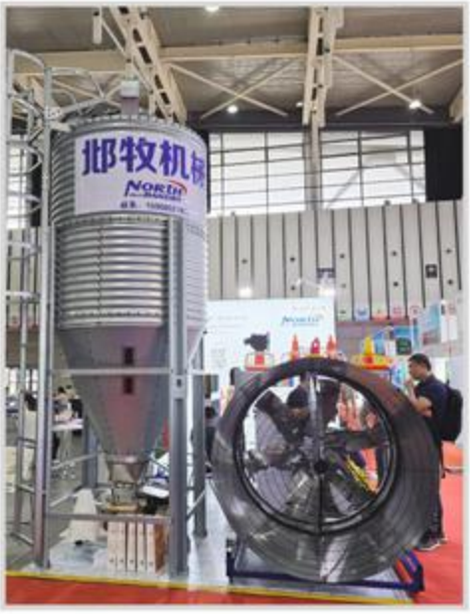
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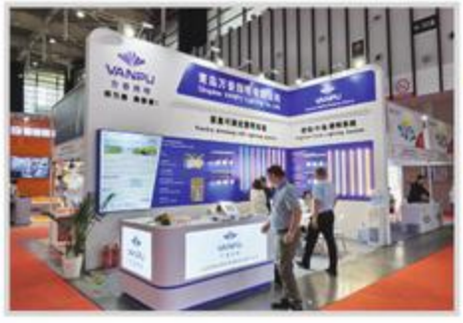
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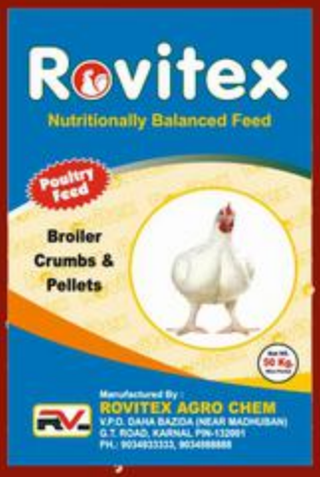
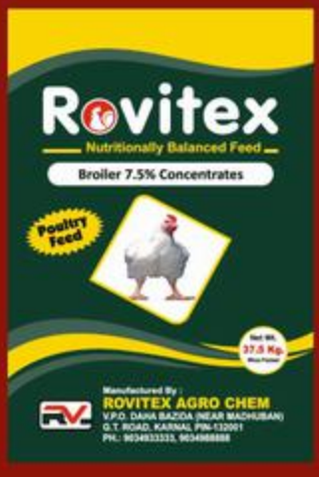
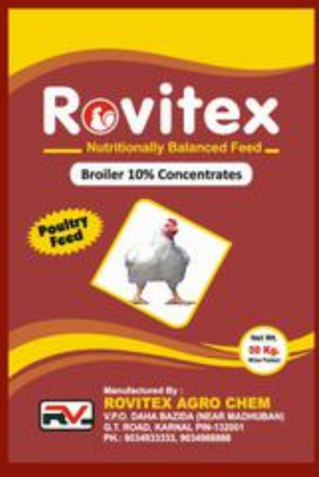
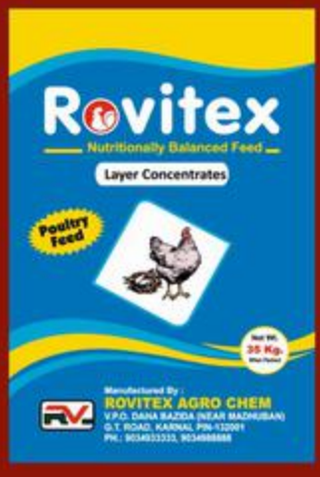
- Broiler Pre-Starter Crumbs
- Broiler Starter Crumbs
- Broiler Finisher Pellets









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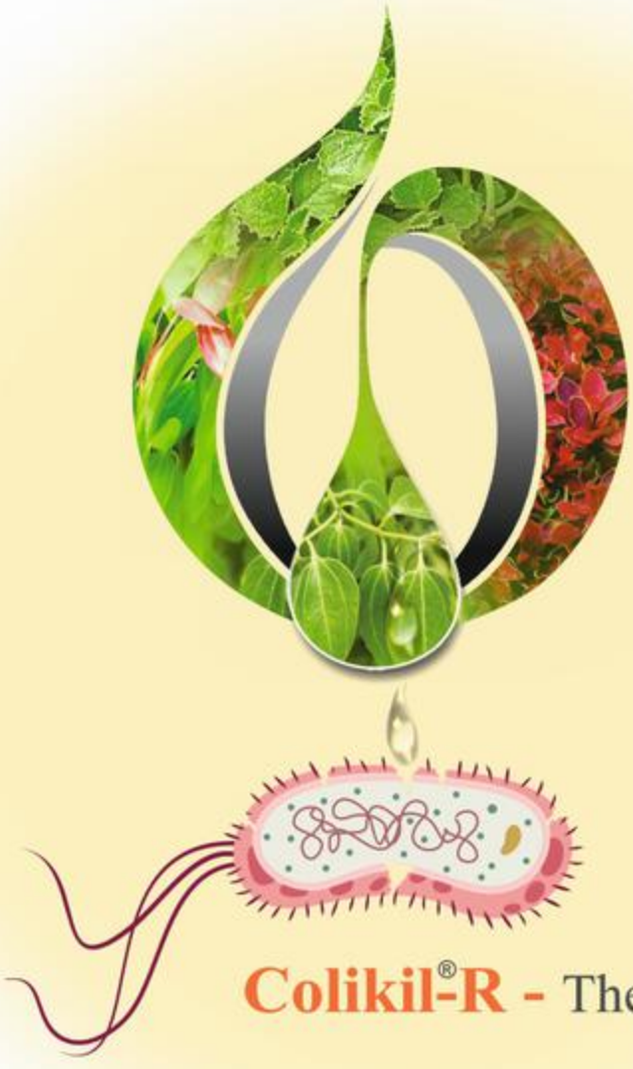

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Why low-cost Binders Ultimately Cost you more Money

Sabine Masching

In brief:

- Unspecific binders create a false economy for protein producers, as they not only bind mycotoxins, but also essential nutrients like amino acids and vitamins - ultimately compromising performance.
- Binding performance varies widely among products, even within the same binder class. Inconsistency in product quality is a red flag for producers, with wide variability *in* Deoxynivalenol (DON) and Aflatoxin B1 (AfB1) adsorption rates across different binder types and pH levels demonstrates.
- Mycofix® delivers proven, specific mycotoxin deactivation without interfering with nutritional or veterinary inputs.

What are binders?

Mycotoxin binders are feed additives used to reduce the absorption of harmful mycotoxins in a food animal's gut by binding them and preventing their absorption into the bloodstream and subsequent distribution to target organs such as the liver, kidneys, or immune tissues.

Binders fall into three main groups:

- Inorganic: such as bentonites and zeolites
- Organic: such as yeast cell wall components like MOS and ß-glucans
- Activated materials: such as charcoal

While some offer good binding capacity, many are unspecific, meaning they can also bind valuable nutrients.

Unspecific binders: a false economy

In animal protein production, profit is made by controlling input costs. One of the biggest, if not the number one, costs of production is feed. It is understandable that producers may look to low-cost mycotoxin binders to supplement their high-cost nutrition program. But choosing unspecific binders, often selected for their low cost, can have unintended and costly consequences.

Not only do these materials bind mycotoxins, but they can also adsorb essential nutrients such as amino acids, vitamins, and trace elements. This phenomenon undermines animal performance and nutritional efficiency, eroding the feed rations' true value.

When amino acids, vitamins, and trace elements are adsorbed by unspecific binders in the gastrointestinal tract, they are no longer bioavailable to the animal. This leads to reduced feed efficiency, compromised immunity, slower growth, and suboptimal production performance. Over time, this translates to tangible economic loss - from increased veterinary costs, to lower feed conversion ratios, and reduced market weights.

This nutrient loss is often hidden and may manifest as producers missing production targets while "doing everything right". Feed formulations may appear to meet nutritional specifications on paper, but if a portion of the nutrients is hit by unspecified binders and rendered unavailable, the actual delivered value is diminished. This effect can be especially damaging in high-performance systems where nutrient density is carefully calculated.

Poor performance: the good, the bad and the ugly

The issue is well illustrated by the data from extensive binder evaluations at dsm-firmenich, including a project that tested over 300 substances encompassing mineral clays, organoclays, charcoals, and yeast derivatives. These materials were assessed for their binding capacity under different conditions for AfB1.

AfB1 adsorption data under the same standardised testing protocol. Again, inorganic binders showed a broad range of results, and not all products achieved sufficient binding. This variability underscores the importance of specificity and consistency in binder performance.

Mycofix®

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MYCOTOXIN RISK MANAGEMENT

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With 3 combined strategies

- Adsorption
- Biotransformation
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*Authorized by Regulation (EU) 1060/2013, 1016/2013, 1115/2014, 2017/913, 2017/930, 2018/1568, 2021/363 and FDA approved (21 CFR §573.485)

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A product that underperforms even modestly may allow residual mycotoxins to pass through the gastrointestinal tract and exert negative effects on animal health and productivity.

Mycofix®: only binds the bad stuff

The Mycofix® product line is designed around the principle of selective adsorption. It targets harmful mycotoxins like AfB1 while leaving beneficial nutrients untouched. This is achieved through a combination of mineral binders with known specificity and proprietary additives that enhance detoxification while avoiding interference with nutrient absorption.

Unlike many bentonite-based binders, Mycofix® Secure has demonstrated minimal interaction with oral antimicrobials and coccidiostats. Testing in simulated gastrointestinal conditions showed that Mycofix® does not significantly adsorb veterinary actives such as enrofloxacin or bactericins. Additionally, Mycofix® operates well below the EU maximum allowable levels for bentonite in feed (20 kg/t), with typical inclusion rates ranging from 0.5 to 3 kg/t.

To demonstrate this capability, Mycofix® Secure was subjected to controlled testing for potential nutrient interactions. Conducted in an external accredited laboratory, the study evaluated concentrations of amino acids and vitamins in feed with and without the addition of 0.2% Mycofix® Secure.

The results were conclusive: no significant differences were observed between the control and Mycofix®-supplemented feeds, indicating that Mycofix® does not adsorb amino acids or vitamins under practical inclusion levels.

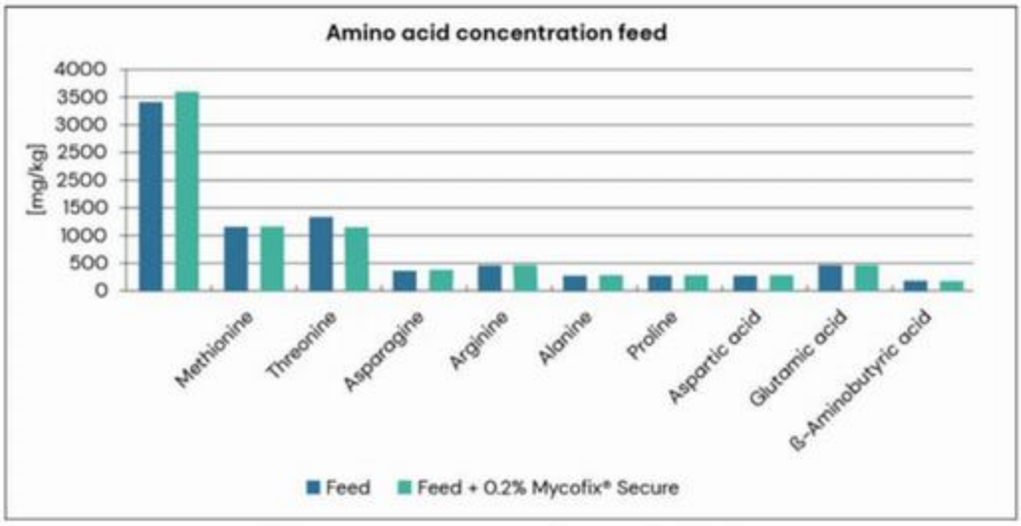
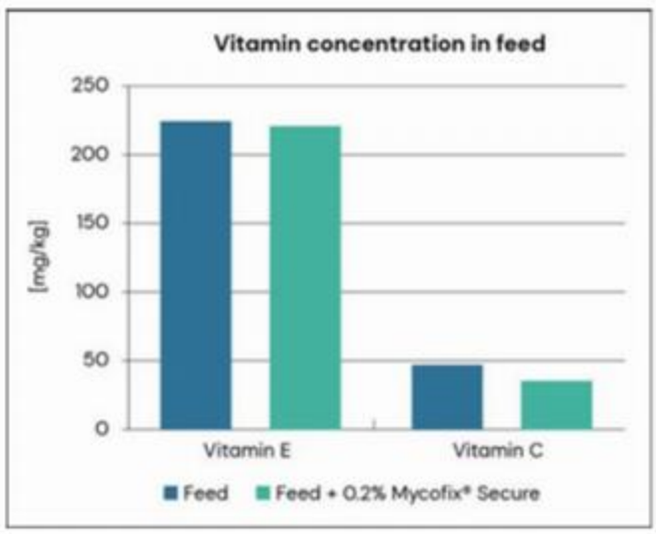


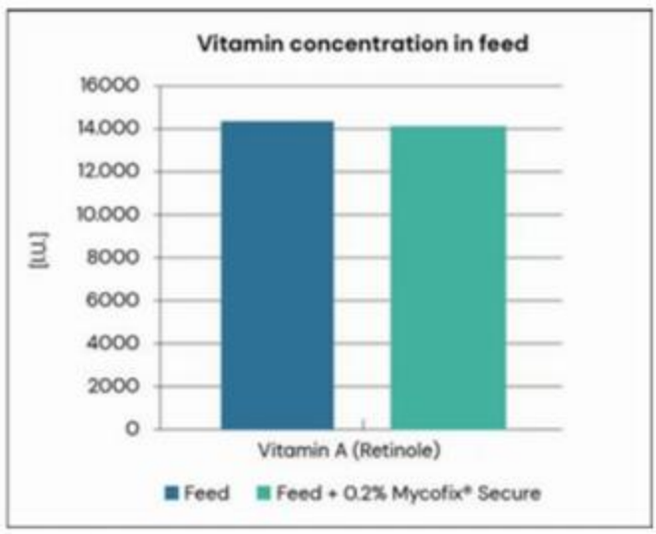
Table 1: Amino Acids in Feed (LC-MS/MS)

What's next?

Precision matters - unspecific binding leads to nutrient loss and hidden costs. Mycofix® is a proven solution for targeted mycotoxin control without the nutritional cost - because when it comes to mycotoxin risk management, the cheapest solution on the invoice can become the most expensive in practice.

About the Author
Sabine Masching - *Product Manager Mycotoxin, Animal Nutrition & Health at dsm-firmenich*





Tables 2 & 3: Vitamins in Feed

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ARTICLE

पोल्ट्री उद्योग में ब्लॉकचेन ट्रेसिबिलिटी प्रणाली: गुणवत्ता और पारदर्शिता की नई दिशा

डॉ. पवार ऋतिक नामदेव', डॉ. शिप्रा तिवारी'

1. परिचय:

पोल्ट्री उद्योग विश्व खाद्य प्रणाली में एक महत्वपूर्ण भूमिका निभाता है। यह प्रोटीन का मुख्य स्रोत है और ग्रामीण एवं शहरी अर्थव्यवस्था में रोजगार और आय प्रदान करता है। भारत में पोल्ट्री उद्योग तेजी से बढ़ रहा है, और यह निर्यात के लिए भी महत्वपूर्ण अवसर प्रदान करता है। वैश्विक स्तर पर, पोल्ट्री उद्योग में लगातार वृद्धि हो रही है, जिससे उपभोक्ता मांग और गुणवत्ता मानकों में सुधार की आवश्यकता बढ़ रही है। उपभोक्ताओं की बदलती प्राथमिकताएँ, स्वास्थ्य और सुरक्षा मानक, और वैश्विक प्रतिस्पर्धा के कारण उद्योग में नवाचार और आधुनिक तकनीक का समावेश आवश्यक हो गया है।

2. पोल्ट्री आपूर्ति श्रृंखला और ट्रेसिबिलिटी की आवश्यकता

पोल्ट्री उत्पादों की आपूर्ति श्रृंखला जटिल होती है, जिसमें फार्म, प्रोसेसिंग यूनिट, पैकेजिंग, वितरण और खुदरा विक्रेताओं का समन्वय शामिल होता है। इस जटिलता के कारण गुणवत्ता नियंत्रण, खाद्य सुरक्षा और उपभोक्ता विश्वास बनाए रखना चुनौतीपूर्ण हो जाता है। ट्रेसिबिलिटी से यह सुनिश्चित होता है कि उत्पाद की उत्पत्ति, प्रसंस्करण और वितरण का पूरा रिकॉर्ड उपलब्ध हो, जिससे उपभोक्ता और उद्योग दोनों को लाभ होता है।

3. ब्लॉकचेन तकनीक का परिचय और कार्यप्रणाली

ब्लॉकचेन एक वितरित डिजिटल लेजर है जो लेन–देन और डेटा रिकॉर्ड को सुरक्षित और पारदर्शी रूप से स्टोर करता है। प्रत्येक ट्रांजैक्शन या डेटा एंट्री को क्रिप्टोग्राफिक तरीके से जोड़कर ब्लॉक बनाता है और इसे श्रृंखला (चेन) में शामिल किया जाता है। इस प्रणाली में डेटा में किसी प्रकार का परिवर्तन लगभग असंभव होता है, जिससे फर्जीवाड़ा और गुणवत्ता हेरफेर रोकने में मदद मिलती है।

4. पोल्ट्री मांस में ब्लॉकचेन अनुप्रयोग

ब्लॉकचेन तकनीक पोल्ट्री उद्योग में उत्पादन से लेकर उपभोक्ता तक पूरी प्रक्रिया की निगरानी संभव बनाती है। इसमें शामिल हैंरू

फार्म लेवल डेटारू आहार, टीकाकरण, स्वास्थ्य रिकॉर्ड, पशु वजन।

प्रोसेसिंग यूनिट डेटारू स्लॉटरिंग, पैकेजिंग, तापमान और माइक्रोबियल परीक्षण।

वितरण और खुदरा डेटारू ट्रक तापमान, शेल्फ–लाइफ, स्टोरिंग और बिक्री रिकॉर्ड।

5. गुणवत्ता नियंत्रण और मानक

ब्लॉकचेन ट्रेसिबिलिटी भ।ब्ब्, ैप 22000 और ै।प मानकों के अनुरूप गुणवत्ता सुनिश्चित करती है। प्रत्येक चरण में रिकॉर्डिंग से बैक्टीरियल संक्रमण, खराब मांस और अनियमितताओं की संभावना कम हो जाती है। डेटा का रियल–टाइम मॉनिटरिंग उत्पादन और प्रोसेसिंग यूनिट्स को तेज निर्णय लेने में सक्षम बनाता है।

6. उपभोक्ता विश्वास और स्मार्ट पैकेजिंग

ब्लॉकचेन आधारित ट्रेसिबिलिटी उपभोक्ताओं को क्यूआर कोड, स्मार्ट लेबल और मोबाइल एप्लिकेशन के माध्यम से उत्पाद की पूरी जानकारी उपलब्ध कराती है। उपभोक्ता देख सकते हैं कि मांस की उत्पत्ति कहाँ हुई, पशु का स्वास्थ्य रिकॉर्ड कैसा था, और मांस किस तापमान पर परिवहन किया गया। इससे उपभोक्ता विश्वास बढ़ता है और ब्रांड की प्रतिष्ठा मजबूत होती है।

7. भारत और वैश्विक केस स्टडी

- भारतः पश्चिमी भारत के पोल्ट्री फार्मों ने ब्लॉकचेन का प्रयोग करके आहार, स्वास्थ्य और तापमान रिकॉर्ड को स्टोर किया, जिससे शेल्फ–लाइफ और मांस की गुणवत्ता में सुधार हुआ।
- विश्व स्तरः Walmart और Tyson Foods ने अपने पोल्ट्री और मांस उत्पादों में ब्लॉकचेन ट्रेसिबिलिटी लागू की है। इससे खाद्य सुरक्षा घटनाओं में कमी आई है और उत्पाद रिकॉल की प्रक्रिया तेज हुई।

8. फायदे, चुनौतियाँ और समाधान (विस्तारित)

ब्लॉकचेन ट्रेसिबिलिटी के अनेक फायदे हैं जो पोल्ट्री उद्योग को स्थायी और प्रतिस्पर्धात्मक बनाते हैं।

- गुणवत्ता नियंत्रणः हर उत्पादन चरण का रिकॉर्ड रखकर मांस की ताजगी और पोषण बनाए रखना।
- उपभोक्ता विश्वासः पारदर्शी डेटा से ग्राहकों का विश्वास बढ़ता है।
- फर्जीवाड़ा और धोखाधड़ी में कमीः डेटा परिवर्तन असंभव होने के कारण।
- निर्यात में प्रतिस्पर्धात्मक लाभः अंतरराष्ट्रीय मानकों के अनुसार गुणवत्ता और ट्रेसिबिलिटी।
- व्यावसायिक दक्षताः डेटा एनालिटिक्स से उत्पादन और वितरण में सुधार।

चुनौतियाँः

- तकनीकी ज्ञान की कमी।
- उच्च प्रारंभिक निवेश लागत।
- डेटा प्रबंधन और साइबर सुरक्षा की जटिलताएँ।
- छोटे और मध्यम फार्मों के लिए संसाधन और प्रशिक्षण की कमी।

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समाधानः

- ब्लॉकचेन प्रशिक्षण और कार्यशालाओं का आयोजन।
- डिजिटल प्लेटफॉर्म और सॉफ्टवेयर समाधान।
- सार्वजनिक–निजी साझेदारी और निवेश बढ़ाना।
- छोटे फार्मों के लिए सरल और लागत–कुशल ट्रेसिबिलिटी सिस्टम विकसित करना।

9. सतत् उत्पादन और पर्यावरणीय पहलू (विस्तारित)

ब्लॉकचेन तकनीक न केवल गुणवत्ता और पारदर्शिता सुनिश्चित करती है, बल्कि पर्यावरणीय स्थिरता में भी योगदान देती है।

- ऊर्जा दक्षताः डेटा आधारित निगरानी से ऊर्जा उपयोग और संसाधनों का बेहतर प्रबंधन।
- अपशिष्ट प्रबंधनः फार्म और प्रोसेसिंग यूनिट में अपशिष्ट की निगरानी और उसका रीयूजध्रीसायकलिंग।
- जल संरक्षणः पानी के उपयोग और अपशिष्ट जल की गुणवत्ता पर निगरानी।
- सतत् उत्पादनः उत्पादन चक्र में कम पर्यावरणीय प्रभाव और ग्रीन टेक्नोलॉजी का समावेश।
- कार्बन फुटप्रिंट कम करनाः डेटा आधारित निर्णय लेने से ट्रांसपोर्टेशन और उत्पादन प्रक्रिया में कार्बन उत्सर्जन में कमी।

10. भविष्य की दिशा और तकनीकी नवाचार (विस्तारित)

भविष्य में ब्लॉकचेन के साथ **AI, IoT** और स्मार्ट सेंसर का समन्वय पोल्ट्री उद्योग को स्मार्ट, ऑटोमेटेड और अधिक पारदर्शी बनाएगा। यह तकनीक निम्नलिखित क्षेत्रों में क्रांतिकारी बदलाव ला सकती हैः

- रीयल–टाइम डेटा मॉनिटरिंगः फार्म से लेकर वितरण तक हर स्टेप पर तापमान, आहार और स्वास्थ्य रिकॉर्ड की निगरानी।
- उत्पादन दक्षता में सुधारः डेटा एनालिटिक्स के माध्यम से बेहतर फीड प्रबंधन, रोग नियंत्रण और समय पर उत्पादन निर्णय।
- स्मार्ट पैकेजिंग और उपभोक्ता इंटरफेसः मोबाइल एप्लिकेशन और क्यूआर कोड के माध्यम से उपभोक्ता तुरंत मांस की गुणवत्ता और उत्पत्ति की जानकारी प्राप्त कर सकते हैं।
- नए उत्पाद और नवाचारः लैब–ग्रोथ पोल्ट्री मांस, वैकल्पिक प्रोटीन स्रोत और पर्यावरण अनुकूल पैकेजिंग का विकास।
- वैश्विक प्रतिस्पर्धाः अंतरराष्ट्रीय मानकों के अनुरूप गुणवत्ता सुनिश्चित करके निर्यात में वृद्धि और बाजार हिस्सेदारी बढ़ाना।
- सतत् और पर्यावरण अनुकूल उत्पादनः ऊर्जा दक्षता, अपशिष्ट प्रबंधन और जल संसाधनों की सुरक्षा।
- भविष्य की तकनीकी साझेदारीः **AI, IoT** और ब्लॉकचेन का संयुक्त प्रयोग उद्योग में स्मार्ट फार्मिंग और डिजिटल सप्लाई चेन सुनिश्चित करेगा।

11. निष्कर्ष

पोल्ट्री उद्योग में ब्लॉकचेन ट्रेसिबिलिटी ने गुणवत्ता, पारदर्शिता और उपभोक्ता विश्वास में नया युग शुरू किया है। यह तकनीक न केवल उत्पाद की ताजगी और पोषण को सुनिश्चित करती है, बल्कि उपभोक्ताओं और उद्योग के बीच विश्वास भी मजबूत करती है। भारत में इस तकनीक को अपनाने से उत्पादन प्रक्रिया अधिक व्यवस्थित, निर्यात के लिए प्रतिस्पर्धात्मक और उपभोक्ता संतुष्टि के लिए विश्वसनीय बनेगी।

12. सीख और सुझाव

- तकनीकी प्रगतिः **AI** और **IoT** के संयोजन से उत्पादन और निगरानी में सुधार।
- उद्योग में नवाचारः लैब–ग्रोथ मांस, स्मार्ट पैकेजिंग और वैकल्पिक प्रोटीन स्रोत।
- प्रशिक्षण और शिक्षाः फार्म और प्रोसेसिंग यूनिट्स में ब्लॉकचेन उपयोग पर कार्यशालाएं और प्रशिक्षण।
- सार्वजनिक–निजी साझेदारीः सरकार और उद्योग के बीच सहयोग से ब्लॉकचेन तकनीक को सभी स्तरों पर लागू करना।
- भविष्य की दिशाः **IrR**, सुरक्षित और प्रतिस्पर्धात्मक पोल्ट्री उद्योग की ओर अग्रसर।

डॉ. पवार ऋतिक नामदेव[1], डॉ. शिप्रा तिवारी[1]
[1](एम.वी.एस.सी. स्कॉलर), पशु उत्पाद प्रौद्योगिकी विभाग,
पशु चिकित्सा विज्ञान एवं पशुपालन महाविद्यालय, दुवासु,
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1 Data on file, Study Report No. B815R-US-18-A46, Zoetis Inc.

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The Phage Forward:
Engineering a New Era for Indian Poultry

Chandan Kumar*

India stands as the world's 3rd largest egg producer and 5th largest broiler meat producer. Yet, this booming industry is navigating a perfect storm: rampant antimicrobial resistance (AMR), endemic diseases, and rising consumer awareness. The old tools are breaking. The solution lies not in a new drug, but in a new paradigm: proactively managing the bird's internal ecosystem through phage therapy and microbiome engineering.

The Problem: Why the Old Model is failing

The reliance on antibiotics as a cornerstone of poultry health is proving to be a double-edged sword. The overuse of antimicrobials has fueled a global crisis of AMR, rendering many first-line treatments ineffective. While alternatives like *prebiotics* and *probiotics* exist, they often lack the potency and precision needed to combat major pathogens like *Salmonella* and *E. coli*. We are approaching a post-antibiotic era where common infections could once again become untreatable. The Indian poultry industry, a significant user of antimicrobials, is under immense pressure to find a sustainable and effective solution. The cornerstone of this new approach lies in a deeper understanding that a *healthy gut* is the foundation of bird health, welfare, and productivity. It's not just about preventing disease; it's about optimizing nutrient absorption for better *Feed Conversion Ratios* (FCR) and a reduced *environmental footprint*.

The Solution: A Two-Pronged Scientific Revolution

This new paradigm represents a shift from a **"Warfare" model** (killing pathogens with broad-spectrum drugs) to an **"Ecological" model** (engineering a resilient internal environment where pathogens cannot thrive).

1. Phage Therapy: The "Smart Bomb" for Pathogens

- **What it is:** Bacteriophages (phages) are naturally occurring viruses that specifically infect and destroy bacteria. They are the most abundant biological entities on Earth, each strain targeting a specific bacterial host.

The Milestone Advantage:

- **Surgical Precision:** Unlike antibiotics, phages can be deployed to eliminate only the specific pathogenic strain (e.g., a virulent *Salmonella*) causing an outbreak, leaving the beneficial gut microbiome completely intact.
- **Self-Replicating & Self-Limiting:** They multiply only as long as the target pathogen is present and naturally die off once the infection is cleared.
- **Biofilm Penetration:** Phages are highly effective at destroying biofilms—slimy bacterial communities that are notoriously resistant to antibiotics and disinfectants, a major challenge in farm sanitation.

2. Microbiome Engineering: Building a Resilient "Internal Garden"

This goes beyond simply adding a probiotic. It involves using advanced science to design and introduce synergistic communities of beneficial bacteria tailored for the poultry gut.

The Milestone Advantage:

- **Proactive Health:** By understanding the gut microbiome's development from chick to maturity, we can design "starter cultures" for day-old chicks, guiding their microbiome to a robust state that naturally outcompetes pathogens from the start.
- **Enhanced Performance:** We can engineer microbiomes to boost performance. For instance, introducing bacteria that efficiently break down phytate in plant-based feed reduces the need for supplemental phosphorus and lowers phosphate pollution in manure.
- **Improved Welfare:** Emerging research on the gut-brain axis shows that a well-balanced microbiome can lead to calmer birds, reducing stress-induced behaviors like feather pecking.

Relevance to India: A Game-Changer for the Domestic Industry

1. Tackling the AMR Crisis Head-On:-

A 2020 study in *The Lancet* estimated India's antibiotic use in livestock grew by 82% between 2000 and 2018. A 2022 ICAR report found alarming resistance in poultry pathogens: 60-70% of *E.coli* samples were resistant to tetracycline and ampicillin, and over 50% of *Salmonella* samples were resistant to fluoroquinolones. The World Bank estimates AMR could cost India 1-2 Lakh crore rupees annually by 2050. The poultry industry must be part of the solution.

2. Addressing Endemic Diseases with Precision

Colibacillosis (caused by APEC) is a leading cause of mortality, costing farmers an estimated **₹5-7 per bird. Salmonellosis** remains a primary food safety concern, with a 2023 study finding *Salmonella* in **over 15% of retail chicken samples.** Phage therapy offers a targeted solution. Imagine a scenario in Punjab where a multidrug-resistant *Salmonella* strain is causing an outbreak. Phages isolated from local wastewater can be rapidly deployed as a water additive to stop the outbreak in its tracks.

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3. Economic Empowerment for Smallholders

With over **70% of the industry run by smallholders**, cost-effectiveness is key. The average FCR in India is **1.6-1.8**, compared to a global best of **1.3-1.4**. ICAR-NIANP research shows tailored microbial supplements can improve FCR by **5-8%**; advanced microbiome engineering promises even greater gains. An affordable, region-specific **"Phage Bank"** could provide small farmers with a powerful, cost-effective alternative to expensive and failing last-ditch antibiotics.

4. Aligning with Market and Regulatory Trends

The "No Antibiotics Ever" (NAE) market is growing at **~15% annually** in urban centers, with products commanding a \]. Phage therapy provides a verifiable pathway to "residue-free" production, unlocking multi-billion dollar export markets in the UAE and other GCC countries. Regulatory bodies like *FSSAI* are tightening residue norms, and the National Action Plan on AMR mandates reduced antibiotic use in livestock.

The Indian Roadmap: From Labs to Farms

The foundation for this revolution is already being laid like Institutions like **ICAR-IVRI** and **CSIR-IMTECH** have active phage research programs. Biotech startups like **Gangagen Labs** and **Vet Phage** are pioneering phage-based solutions. Large integrators like **Venkys, Suguna, and Skylark** have the resources to pilot this technology, create phage libraries for their contract farmers, and build consumer brands around the "Science-Backed, Antibiotic-Free" promise.

Challenges on the Path to Adoption

The **CDSCO** has no clear pathway for approving phages as veterinary therapeutics. This is the single biggest bottleneck. Require the development of rapid on farm diagnostics and a reliable cold chain for phage storage in rural areas. Extensive farmer and veterinarian education is needed to move beyond the "antibiotic-first" mindset and build trust in this novel technology.

Conclusion:

For India, phage therapy and microbiome engineering are not a luxury but a **strategic necessity for sustainable growth**. This paradigm shift aligns with the national mission of **"One Health"** by combating AMR, supports **"Make in India"** in biotech, and empowers **"Doubling Farmer Incomes"** by enhancing efficiency and reducing losses. By investing in this transition, India can transform its poultry sector from one defined by disease firefighting to one renowned for its safety, sustainability, and scientific leadership. The journey has begun in our labs; the time is now to bring it to our farms. This is the key to producing safer food for 1.4 billion people, safeguarding the livelihoods of millions of farmers, and protecting the efficacy of life-saving medicines for future generations.

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Flexibility, Learning, and Growth: An SEC Experience

FROM THE SEC CENTER LEAD'S DESK
DR. P. E. VIJAY ANAND (SEC/USSEC)

Dr. Sharad Durge
Manager - Formulation and Technical Services at ADM India

From the SEC Centre Lead's Desk: As the SEC India Program nears its two-year operational milestone, it offers a moment to reflect on the progress made, the partnerships forged, and the untapped potential that lies ahead. The journey has been both rewarding and inspiring. The program is steadily shaping future-ready professionals for those engaged in protein value chain industry. What SEC provides is far more than just courses. It is a global platform that fosters cross-cultural learning, continuous skill-building, and vibrant community networking.

For today's young professionals, this is an incredible opportunity right at their fingertips, available through digital tools and platforms. I often wish our generation had access to such resources, but being part of this evolving community of learners is equally enriching. After all, learning never truly stops; it only demands curiosity and determination.

Dr. Sharad Durge, Manager - Formulation and Technical Services at ADM India, shares his inspiring journey with the Soy Excellence Center (SEC), emphasizing how continuous learning, adaptability, and active community engagement have fueled his professional growth and empowered his team. He proudly showcases his achievements and remains eager to expand his credentials through future SEC programs. Here is what Sharad has to say ....

SEC INDIA LEARNING BOARD
Sharad Durge

Poultry	Feed Milling	Dairy	Aqua	Food & Beverages	Formulation Lab
					Feed Formulation Lab 1- Online
					Feed Formulation Lab 2 - Online
					

1. **How did your SEC journey begin?**

It's all started with a notification received from my organization pointing me to the learning opportunity provided by SEC India in various animal husbandry streams. Learning is something that always excites me. Being Manager Formulation and Technical Services India at ADM it was my motive to keep myself updated and disseminate knowledge earned from SEC to my sales, production and QC team. I took these opportunities with a strong desire to advance my professional knowledge and achieve career goals. I also encouraged my teammates to get registered and start learning.

2. **What are the factors that motivated you to pursue higher levels of achievement?**

Several factors motivated me to pursue my learning journey with SEC India. First, it is the ease offered for learning. Online learning provided flexibility in terms of time one could take these courses during day or night time, as seen convenient. Even the weekly meetings were made flexible considering schedules and availability of many participants; as almost all of them are working professionals. Second, I found that highly specialized professionals are called for delivering lectures, discussions and Q&A sessions which is a rare opportunity. This is just a great feast to our brains. Third, Networking while attending in-person training makes it even more exciting; it was an educative opportunity to hear other opinions, practical experiences and challenges handled at their respective workplaces. Also, the encouragement and support provided by my manager and the organisation cannot be forgotten.

3. **What approaches have you taken to systematically complete each course and engage in SEC Community activities?**

Taking courses or being involved with SEC community was easy as all learning processes are managed and delivered on the SEC Website. I focused one course at a time. To register different courses I just have to login and switch in between communities to attend the different courses. The SEC website manages our progress in each community separately. I must call this as a robust tool which can help us achieve all this in a digital world and thank USSEC/ U.S. Soy/ SEC for designing this Global workforce development program.

4. **How you manage your time and how did you stay committed to this learning process and community engagement while balancing personal and professional responsibilities?**

I dedicated my free time during weekends and during travel for this personal learning. Therefore, I really did not to struggle for separate time management. It did not affect my professional work rather; this advanced learning supported me and improved my analytical acumen.

Like Sharad, I encourage more professionals to utilise this opportunity, scale new heights, and transform themselves into true custodians of the protein value chain.

Such opportunities hold potential far beyond its initial appearance

What SEC Members Have to Say

Lt. Dr. Shital V. Chopde
Assistant Professor (Animal Nutrition)
Nagpur Veterinary College, Nagpur
Associate NCC Officer, 1 Mah R & V
Sqn NCC, Nagpur

It has been a great pleasure to be a part of the **India SEC Feed Mill Course - Cohort #7.**

Before joining the course, my main objective was to enhance my understanding of **modern feed manufacturing practices**, **quality assurance**, and **feed safety standards**, so that I could integrate these aspects into both **academic teaching** and **practical training** of veterinary students. The course structure, expert lectures, and well-designed modules effectively helped me achieve these goals.

One of the most impressive aspects of the program was its **industry-oriented approach**, which bridged the gap between theoretical knowledge and real-world feed mill operations. The interactive sessions and case-based learning provided deep insights into **nutrient optimization**, **feed formulation**, and **sustainability aspects** of feed production.

Overall, the course has significantly contributed to my **professional growth**, enhancing my capability to guide students, farmers, and industry personnel with a more practical and scientific outlook. It was a truly enriching experience, and I sincerely thank the SEC India team for their efforts in organizing such a valuable program.

ARTICLE

Trichomonosis in Birds their Prevention and Control

Alok Kumar Singh[1*], Deepali Tiwari[2], Snigdha Shrivastava[3], Rupam Sachan[4] and Pradeep Kumar[5]

Though other dove and pigeon species are also important hosts and can be spread by migrating birds, such as wood pigeons, turtle doves, and stock doves, the rock pigeon is believed to be the primary driver of this parasite's global expansion. This protozoan has caused high-mortality events for wild bird populations also. There have been numerous reports of pigeons dying while consuming grain at bird feeders and grainfeeders. It has been demonstrated that *T. gallinae* can survive in damp or moist conditions, such as water (several hours) or moist grain (5 days). Bird feeders and baths can spread the disease. A trophozoite is the infectious stage that is directly transferred from one bird to another. According to reports, *T. gallinae* is most common in the late spring, summer, and fall. Through crop milk, the parasite can be transferred from parent to child. During courtship actions, pigeons can also exchange it. The parasite is acquired by raptors from their prey. The parasite is contracted by turkeys and chickens by the consumption of contaminated feed or water from infected pigeons.

Etiology

Bird infections caused by *Trichomonas* species are referred to as trichomonosis, "frounce" in raptors, and "canker" in doves and pigeons. Trichomonas gallinae is typically the cause of avian trichomoniasis. Other important species of the protozoan, such as *Trichomonas gypaetinii* in raptors and *Trichomonas stableri* in Pacific coast band-tailed pigeons (*Patagioenasfasciatamonilis*), have been suggested recently. These two organisms are genetically identical to the human-normally-infecting *Trichomonas vaginalis*. *Trichomonas* species are detected in the feces of both wild and captive reptiles and are thought to be a typical element of the flora.

Resistance to physical and chemical action

Temperature: Under laboratory circumstances, it may grow in nutrient broth at 32-40°C (37°C is ideal). pH: Vulnerable to a pH below 6.5 10% bleach solutions inactivate chemicals and disinfectants. Although T. gallinae lacks an environmentally resistant cyst stage, it has been demonstrated to endure in damp or moist conditions, such as moist grain (up to five days) or water (several hours). However, it does not live outside of its host for prolonged periods of time. It is believed that the pseudocyst stage, which was just reported, shields it from adverse environmental circumstances.

Hosts

The different host such as ColumbiformesBand-tailed pigeon (*Patagioenasfasciata*), Domestic chickens (*Gallus gallus*), turkeys (*Meleagris gallopavo*) and Peregrine falcon (*Falco peregrinus*) etc. are the important host.

Transmission

- By ingestion of contaminated water and feed
- Contact with infected birds to susceptible bird.

Sources

- Infectious hosts and their secretions/excretions i.e.saliva, mucus, faeces, crop and gastrointestinal contents.
- Contaminated water and feed, including infectious prey/carrion (gastrointestinal and crop contents) etc. play an important role transmit the disease.

Diagnosis

Little is known about pathogenicity of *T. gallinae*. If a virulent strain is contracted, death may happen as soon as 4 days after infection or as late as 3 weeks. The protozoan comes in a variety of strains. Notable virulent strains include the Mirza strain, which causes oropharyngeal lesions, and the Jones'-Barn and Eiberg strains, which infect the liver.

Clinical diagnosis

Clinical symptoms, microscopic analysis of the protozoan, and necropsy are used to make the diagnosis in avian species. The organism has four anterior flagella, an axostyle, an undulating membrane, and an oval to pyriform shape. Its length ranges from 7 to 11 µm. An infection with this protozoan can cause a variety of lesions and clinical symptoms. Excessive salivation and mucosal inflammation of the mouth and throat may be seen in cases of mild parasite infection. A severe type of the infection can cause vomiting, ruffled feathers, diarrhea, loss of appetite, weight loss, dysphagia, dyspnoea, and a pendulous crop.

Greenish fluid and caseous lesions on the oropharyngeal membranes are signs of lesions that can form and hinder a bird's ability to feed. Young birds are typically affected by trichomoniasis in pigeons and doves. It is believed that infection with nonvirulent strains or recovery from a mild infection are the basis for conferring immunity in birds. The most frequent causes of protozoan proliferation in reptiles' gastrointestinal tracts are inadequate husbandry or immunosuppression brought on by another illness. Weight loss, diarrhoea, and low appetite are clinical indicators of an elevated Trichomonas load. Trichomonas can occasionally spread to the gallbladder or bile duct, causing inflammation of the biliary system.

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There have been reports of ocular lesions in geckos caused by this protozoan.

Lesions:

- Early oral lesions- small cream to yellow spots on oral mucosa to large, thick, caseous lesions.
- Acute infections- Discharge, nodules in mouth.
- Chronic infections- Caseous lesions in mouth and oesophagus; may travel to beak and eyes.
- Lesions of pharynx and crop- Cream coloured to yellow and caseous and may extend to roof of mouth and sinuses.
- Necropsy findings- Fibrin covering the heart, liver, and air sacs may be observed.

Laboratory diagnosis:

- The different Samples are required for laboratory diagnosis i.e. Crop wash, Throat swab, Mucus and Faecal sample.

Differential diagnoses:

- Mycoplasmosis, Tuberculosis, Salmonellosis, Pigeon herpesvirus, Avian paramyxoviruses, Fowl adenovirus, *Aspergillus* spp.,*Candida* spp., *Capillaria*and Vitamin A deficiency etc.

Prevention and control measure:

(i) Sanitation:

- It is advised to make sure feed is appropriately stored and contained in captivity or locations where feeding wild birds is prevalent such as backyard bird feeders to avoid dampness and unauthorized access by other birds. Day to day, change the water and feed.
- To lessen the chance of transmission, it is generally advised to dissuade sizable groups of doves and pigeons from congregating at feeding and watering locations.
- Group housings should be cleared of infected birds.
- Prior to housing wild reptiles with captive reptiles, check them for Trichomonas spp.
- Keep captive reptiles clean and eat a healthy diet to avoid an increase in parasite burden.

(ii) Treatment

- Treatment of birds Infection with lentogenic strains to provide protection against virulent pathogens.
- Strategic antiprotozoal administration.
- Birds kept in custody for rehabilitation with apparent clinical disease, especially doves and pigeons, should be isolated until clinical indications go away.
- Examine doves and pigeons being fed to raptors for *T. gallinae* infection.

Impacts of the disease:

Risks to public health population

- There is no proof that *T. gallinae* is harmful to humans.
- *T. vaginalis* is a sexually transmitted infection that infects humans but is not thought to be a major cause of illness in birds and reptiles.
- Pet bird owners, pigeon breeders, raptors, and pigeon racers should limit their birds' exposure to wild birds and take precautions to reduce infection.

Risks to industry

- Poor thrift of birds infected with this parasite has a negative economic impact on poultry businesses, including treatment costs and a reduction in production value (e.g., weight loss).

Alok Kumar Singh[1#], Deepali Tiwari[2], Snigdha Shrivastava[3], Rupam Sachan[4]and Pradeep Kumar[5]

[1]Department of Veterinary Parasitology, College of Veterinary Science & A.H., Rewa
[2]B.V. Sc & A.H., Student, College of Veterinary Science & A.H., Rewa
[3]Department of Veterinary Medicine, COVSc & A.H., Rewa
[4]PhD Scholar, Department of Veterinary Parasitology, NDVSU, Jabalpur
[5]Department of Veterinary Parasitology, DUVASU, Mathura
[#]corresponding author- email: alok122@gmail.com

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CLFMA of India Sets Bold Agri-Export Agenda at 58th AGM & 66th National Symposium, 2025

Industry leaders unite to shape the roadmap for animal agriculture in India with a strong focus on agriculture exports
Two-day power meet in Hyderabad puts agri-exports, rural livelihoods, and global leadership on centre stage

The Compound Livestock Feed Manufacturers Association (CLFMA) of India successfully concluded its **58th Annual General Meeting (AGM)** and **66th National Symposium** on **22nd & 23rd August 2025** at the Taj Deccan, Banjara Hills, Hyderabad. Themed *"Animal Agriculture in India - The Way Forward,"* the two-day event brought together **policymakers, industry leaders, sector experts, and stakeholders** to shape a unified roadmap for India's animal agriculture sector, with a strong emphasis on boosting agriculture exports.

The event witnessed an overwhelming participation of nearly 450 dignitaries, encompassing a diverse spectrum of stakeholders — from senior government officials, feed manufacturers, dairy and aqua farmers, veterinarians, and nutrition experts, to academicians, scientists, representatives of national and international companies, industry associations, ambassadors, and leaders from allied agro enterprises.

The event commenced with a welcome address by **Mr. Vijay D. Bhandare, Convenor and Managing Committee Member, CLFMA of India.** This was followed by the Chairman's Address from **Mr. Divya Kumar Gulati, Chairman, CLFMA of India**, who highlighted the sector's critical role in strengthening rural livelihoods, ensuring national food security, and enhancing India's standing in global agri-trade.

The Symposium highlighted the immense potential of India's poultry and aquaculture sectors, with the poultry industry growing at an impressive 8% annually, making it both one of the most affordable sources of protein and a vital contributor to rural income. Export opportunities in markets such as the UAE, Maldives, Bhutan, and Bahrain, along with 65% vertical integration, are enabling cleaner, healthier products and stronger global competitiveness. At the same time, challenges like avian influenza and rising kidney infections in states such as West Bengal, Assam, and Telangana pointed to the urgent need for better vaccination, stronger biosecurity, and greater R&D investments. Aquaculture discussions underlined the huge untapped domestic opportunity, with 76% of India's 1.4 billion population consuming non-vegetarian food and over 80% not meeting daily protein requirements, positioning the sector as critical for nutrition and economic growth.

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While rising US tariffs on shrimp exports pose challenges, they were reframed as opportunities to boost domestic demand, enhance farmer returns, and create value-added products for Indian consumers. With government support through schemes like Fisheries and Aquaculture Infrastructure Development Fund (FIDF) and Pradhan Mantri Matsya Kisan Samridhi Sah Yojana (PM-MKSSY), and by fostering stronger industry-government partnerships, both poultry and aquaculture are set to become more resilient, competitive, and future-ready.

While there are challenges, there's also an incredible amount of **potential waiting to be unlocked**. Whether it's**poultry, dairy, fisheries, or aquaculture**, the way forward lies in **collaboration, innovation, and sustained effort**. It lies in coming together — as farmers, industry leaders, policymakers, and academia — and working towards solutions that are practical, scalable, and sustainable.

Setting the tone for the discussions, **Shri. Tarun Shridhar, IAS (Retd.)**, delivered the thematic address, highlighting the critical role of animal agriculture in India's economic and nutritional landscape. The symposium also honoured outstanding contributions through the prestigious CLFMA Awards and Student Awards, recognising both industry achievements and the promise of emerging talent.

Mr. Pravin S. Lunkad was honored with the CLFMA Lifetime Achievement Award, while **Dr. K. Karthikeyan** and **Prof. Jyoti Palod** were each conferred with the prestigious **CLFMA Award in recognition of their significant contributions to the industry.**

The Symposium was graced by eminent dignitaries, including **Prof. S. P. Singh Baghel,** Hon'ble Minister of State for Fisheries, Animal Husbandry & Dairying,and Ministry of Panchayati Raj, Government of India; **Sri Vakiti Srihari,** Hon'ble Minister for Animal Husbandry, Dairy Development & Fisheries, Sports and Youth Services, Government of Telangana; **Sri Sabyasachi Ghosh**, IAS, Special Chief Secretary, Government of Telangana; and **Dr. Muthukumaraswamy B.**, Joint Secretary(NLM), Department of Animal Husbandry & Dairying, Government of India, **Shri. Tarun Sridhar, IAS (Retd. Secretary AHD), Shri. Eatela Rajendra**, Member of Parliament, Government of Telangana, **Shri. Mettu Saikumar**, Chairman of Fisheries Federation, Telangana, etc.

Prof. S. P. Singh Baghel, Hon'ble Minister of State for Fisheries, Animal Husbandry & Dairying, and Ministry of Panchayati Raj, Government of India, said, *"Our livestock and fisheries sectors embody the resilience of India's villages and the aspirations of our youth. The path ahead is not just about producing more, but about producing responsibly — with stronger animal health systems, skill development for farmers, and sustainable practices that protect our environment. The government's priority is to create a balance where rural livelihoods are strengthened, nutritional needs are met, and India contributes meaningfully to global food security. An event like CLFMA's AGM and Symposium is vital, as it brings policymakers, scientists, and industry leaders together on a single platform to co-create solutions that will shape the future of India's animal agriculture."*

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Sri Vakiti Srihari, Hon'ble Minister for Animal Husbandry, Dairy Development & Fisheries, Sports and Youth Services shared how **dairy and poultry support nearly seven million livelihoods in Telangana alone** and spoke about the government's ongoing efforts to improve **veterinary infrastructure, vaccination drives, and equipment support** – efforts that are helping Telangana emerge as one of the **leading milk producers in southern India.**

Mr. Divya Kumar Gulati, Chairman at CLFMA of India, said, *"India is home to the world's largest livestock population and accounts for 13% of global milk production. The sector contributes 30.23% to agricultural GVA and 5.5% to the national economy, making it a cornerstone of national growth, rural prosperity, and nutritional security. Yet, this is only the beginning of our growth story. With the right policies, stronger cold-chain and processing infrastructure, and faster adoption of innovation, we can evolve from being the world's largest producer to one of its most influential exporters. CLFMA remains committed to working with all stakeholders to turn this vision into reality."*

"We have also proposed the establishment of:

- Export Oriented Zones (EOZs)
- Livestock Export & Domestic Development Authority

These strategic bodies will significantly enhance ease of doing business and boost the global competitiveness of the Indian poultry sector by ensuring:

- Access to raw materials at global price parity.
- A simplified regulatory framework for domestic and international trade.
- Market creation and diversification through government-to-government collaboration and coordinated branding strategies through FTA."

For the very first time, **CLFMA of India introduced a Student Program Initiative**, opening new doors for young minds to engage with the livestock and animal nutrition sector. This unique platform was created to inspire, empower, and connect the next generation of researchers and professionals with the real-world challenges and opportunities of animal agriculture.

The initiative drew an overwhelming response, with 134 students from across the Country participating. Students came forward with research and innovative ideas in four vital sectors – Poultry, Dairy, Swine, and Aqua. Topics ranged from the use of unconventional feed ingredients and gut health management in poultry to

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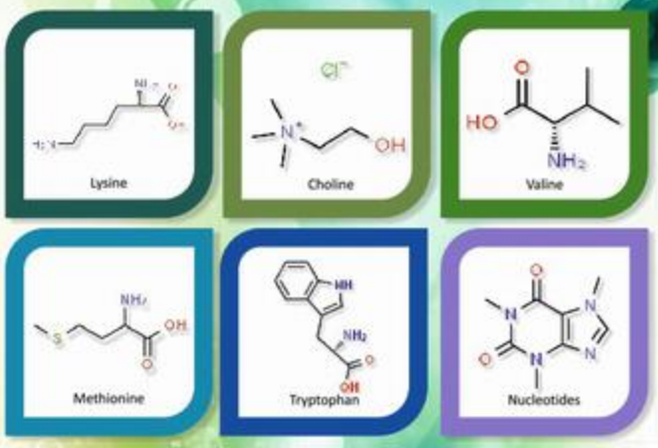

To achieve high efficiency poultry farming, a finely balanced feed formula with high bioavailability of feed nutritional fractions especially of critical ingredients including limiting amino acids, trace minerals etc., are required. To attain this balance, supplementation becomes extremely crucial to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

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dairy management innovations under climatic stress, biosecurity in swine farming, and new technologies for aqua feed production. Each category encouraged students to blend scientific knowledge with practical approaches, showcasing their ability to shape the future of sustainable livestock practices.

To honour their creativity and hard work, the program awarded gold, silver, and bronze winners in every sector. **The Gold winner received ₹1 lakh, Silver ₹50,000, and Bronze ₹25,000, along with a ticket to Hyderabad and a complimentary stay, making the recognition both prestigious and rewarding.**

The felicitation took place at the 58thAGM & 66thNational Symposium 2025 in Hyderabad, where industry leaders and academicians applauded the students' contributions. This initiative not only celebrated young talent but also marked a milestone in CLFMA's efforts to build stronger bridges between academia and the livestock sector, ensuring that the sector is well-prepared for the future.

Student Winner List:

- **Poultry Sector Awards:**
  - Gold - Dr. Prasad Shivaji Wadajkar
  - Silver - Dr. Vishal Patil
  - Bronze - Dr. Jalmeen Kour
- **Dairy Sector Awards:**
  - Gold - Dr. Lanje Sunita Khushal
  - Silver - Dr.Vennela Banoth
- **Swine Sector Awards:**
  - Gold - Dr. Hrishikesh Tekade
  - Silver - Dr. Kanishk Kamble
  - Bronze - Dr. Ashish Tiwari
- **Aqua Sector Awards:**
  - Gold - Dr. Tamana Latief
  - Silver - Dr. Patekar Prakash Goraksha
  - Bronze - Dr. Bhupika Dewangan
- **Student Program Awards:**
  - Poultry - Dr. Nikhil Nalabale
  - Dairy - Dr. Rashmi Thakare
  - Swine - Dr. Easteri Debbarma

The Day 1 concluded with the launch of the Souvenir, followed by a vote of thanks delivered by Mr. Nissar F. Mohammed, Hon. Secretary, CLFMA of India, and a networking dinner.

The Welcome of National Symposium 2025 Day 2 was addressed by **Mr Divya Kumar Gulati, Chairman, CLFMA of India** followed with the introduction of Symposium by **Dr. Devender Hooda, CLFMA North Zone President.Mr. Sumit Sureka, Deputy Chairman**, briefed about CLFMA, the theme of the Symposium, the full-day sessions, and highlighted **CLFMA's significant role in contributing towards *Viksit Bharat*."**

Mr. R. S. Sodhi, President, Indian Dairy Associationshared the industry's progress toward becoming a globally competitive dairy sector. **Dr. Girish Kolwankar, Director,Premium Chick Feeds Pvt. Ltd.** highlighted how this industry continues to grow at an impressive **8% annually**, making poultry not only one of the **most affordable sources of quality protein** in the country but also a **major contributor to rural income**. There are exciting **export opportunities** to markets like the **UAE, Maldives, Bhutan, and Bahrain**, and how **65% vertical integration** within the sector is enabling us to deliver **cleaner, healthier products** to consumers while staying competitive globally.**Mr. Manoj M. Sharma, Director, Mayank Aqua Products - Aquaculture**, spoke on 'Looking at Aquaculture Beyond Exports.' He highlighted the global scenario of aquaculture and extended special thanks to Shri Tarun Shridhar, acknowledging his valuable contribution to the aqua sector.

The deliberations also addressed key challenges facing the livestock and aquaculture sectors. Experts highlighted concerns such as the threat of avian influenza and the growing incidence of kidney infections in poultry, particularly in states like West Bengal, Assam, and Telangana. These issues, which directly impact productivity and farmer livelihoods, underscore the urgent need for improved vaccination strategies, stronger biosecurity measures, and greater investments in R&D.

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Discussions then turned to aquaculture, with an emphasis on the immense untapped potential of India's domestic market. With 76% of the population consuming non-vegetarian food and more than 80% not meeting their daily protein requirements, aquaculture was recognized as a critical driver of both nutrition security and economic growth.

While rising tariffs on shrimp exports to the US have posed challenges, stakeholders viewed this as an opportunity to boost domestic demand, enhance price realization for farmers, and develop value-added products for Indian consumers. Supported by government initiatives such as FIDF and PM-MKSSY, industry leaders called for stronger partnerships between government and industry to build resilience and ensure the sector is future-ready.

The symposium featured a series of engaging panel discussions that brought together leading experts, policymakers, and industry stakeholders to deliberate on critical issues shaping the future of animal agriculture in India.

The first panel discussion on the topic, *"Feed, Raw Materials and Other Inputs - Balancing the Balance Sheet"*, moderated by **Dr. O. P. Chaudhary (Retd. JS NLM/PC)**, brought insights from industry leaders including **Mr. R. Ramkutty (Broiler Coordination Committee)**, **Dr. R. S. Masali (Godrej Agrovet Ltd.)**, **Dr. P. S. Mahesh (CEAH-Bengaluru)**, **Dr. N. C. Manju (Animal Nutritionist) and Mr.Jaison John, CLFMA MC Member, Dr.Gagan Garg, Dy. Commissioner of Trade, Department of AH & D, GOI**.The session was followed by an engaging Q&A with the dignitaries and delegates present at the symposium.

This was followed by the **Right to Protein initiative by the U.S. Soybean Export Council (USSEC),** a Special Session delivered by Mr. Jaison John, Regional Head, Market Intelligence - South Asia, USSEC, and Managing Committee Member, CLFMA. He highlighted USSEC's Right To Protein initiative, the campaign aims to educate people about the importance of adequate protein consumption for better nutrition, health, and well-being.

This was followed by a high-level dialogue with national associations on the ***"Outlook of Animal Agriculture for Viksit Bharat,"*** moderated by **Shri. Tarun Shridhar, IAS (Retd.)**. Eminent speakers included **Mr. Suresh Chitturi**, Vice Chairman, All India Poultry Breeders Association, **Mr. Divya Kumar Gulati**, Chairman, CLFMA OF INDIA, **Mr.Ranpal Dhanda,** President, Poultry Federation of India, **Mr. Daljit Singh**, President, Progressive Dairy Farmers Association, **Mr. Saji Chacko,** President, Society for Aquaculture Professionals (SAP), **Mr. Ravi Kumar Yellanki**, President, All India Shrimp Hatchery Association, **Mr. Madan Mohan Maity**, General Secretary, West Bengal Poultry Federation Association, **Mr. Uday Singh Bayas**, President, Indian Poultry Equipment Manufacturers Association, representatives from the poultry, dairy, shrimp, aquaculture, and equipment manufacturing sectors, who shared perspectives on strengthening India's position as a global leader in animal agriculture. The session was followed by an engaging Q&A with the dignitaries and delegates present at the symposium.

The 3rd Session briefed by Dr. Vijay Makhija, CLFMA MC Member, the session on ***"Animal Agriculture: Health Challenges & Potential Solutions"***, moderated by **Dr. P. K. Shukla (Mathura Veterinary College)**, addressed pressing concerns in poultry and dairy health, featuring experts such as **Dr. M. R. Reddy (Association of Avian Health Professionals), Dr. A. S. Ranade, Retd. Professor and Dean at Mumbai Veterinary College, Mumbai &CLFMA Technical Committee Head, Dr. Mukesh Sharma (Dairy Consultant)**, and **Dr. Shirish Nigam (President, INFAH)**. The session was followed by an engaging Q&A with the dignitaries and delegates present at the symposium.

The day concluded with a **Valedictory Session**, led by **Mr. Abhay Shah, Dy. Chairman, CLFMA of India**, which included the felicitation of sponsors, media, guests, and invitees, followed by a vote of thanks delivered by **Mr. R. Ramkutty, Treasurer, CLFMA of India.**

The CLFMA delegation included:

- Chairman, Divya Kumar Gulati
- DY. Chairman Mr Sumit Sureka
- DY. Chairman Mr Naveen Pasuparthy
- DY. Chairman Mr Abhay Parnerkar
- DY. Chairman Mr Abhay Shah
- Hon. Secretary Mr Nissar F. Mohammed
- Treasurer Mr R. Ramkutty
- Convenor, Mr Vijay Bhandare

The programme concluded with a networking dinner, live performance, and the felicitation of sponsors, media representatives, guests, and invitees, marking a celebratory end to two days of engaging discussions and knowledge exchange.

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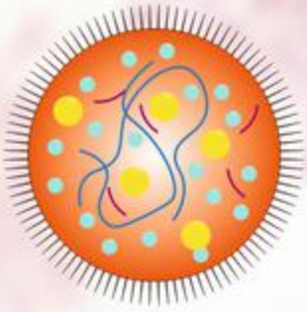

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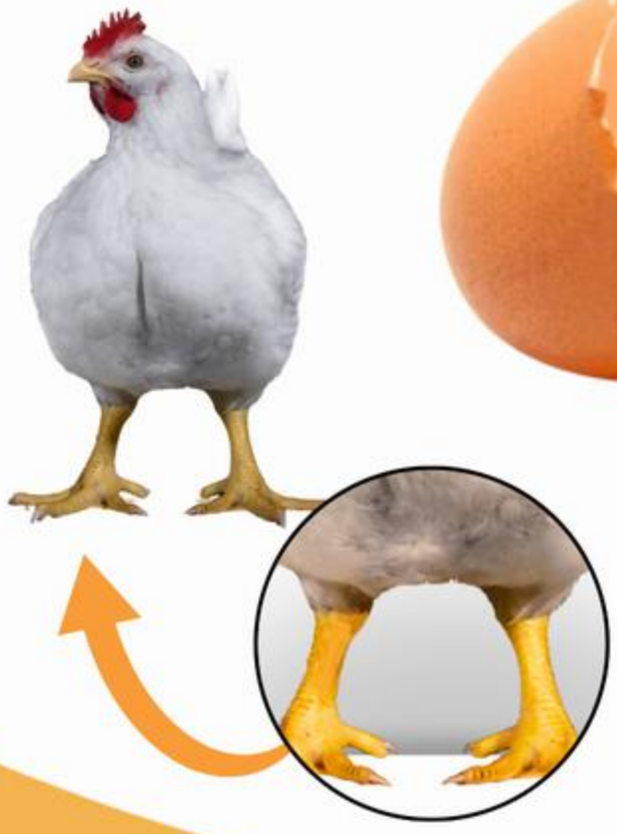

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CO^2-Induced Euthanasia:

Scientific Advances and Regulatory Perspectives for Hatchery Cull Birds

[1]Dr. Sayyed Mushtaque and [2]Dr. Akash Wadal

Chick culling is a common practice in poultry hatcheries, carried out mainly for economic and biological reasons. It involves separating and killing chicks that are considered unprofitable or unsuitable for production—most often male chicks, since they cannot lay eggs and are not efficient for meat production, as well as weak or unhealthy female chicks that would not survive or contribute productively. Because egg-laying breeds and meat-producing breeds are selectively bred for different purposes, raising surplus males would add unnecessary costs, so they are usually culled shortly after hatching or being sexed.

Hatcheries employ trained workers to quickly distinguish between male (cockerels) and female (pullets) chicks, while also checking for signs of illness or defects among the flock. Removing weak or unviable chicks helps maintain overall flock health and reduces the risk of disease. This practice, however, has sparked major ethical and welfare concerns worldwide. In response, researchers are developing alternatives like in-ovo sexing, a technique that determines an embryo's sex before it hatches, thereby avoiding mass culling. Some countries, under public pressure and with technological advances, have already moved to ban chick culling.

In summary, while chick culling continues as a standard method in hatcheries for efficiency and cost reasons, it remains controversial and is increasingly challenged by demands for more humane solutions.

Welfare Guidelines

The American Veterinary Medical Association (AVMA) requires that euthanasia methods, such as CO_2 gassing, must result in a quick loss of consciousness followed by death with minimal suffering. Only AVMA-approved methods are permitted, including rapid maceration and gas displacement using CO_2 or nitrogen. Procedures must be carried out by trained staff, and hatcheries are obligated to regularly verify that these methods are both effective and compliant with welfare standards.

The National Farm Animal Care Council (NFACC) poultry code specifies that weak, injured chicks or live embryos not intended for further use must be euthanized promptly, and no later than one hour after processing. Hatcheries are required to establish clear standard operating procedures (SOPs) for culling, euthanasia techniques, and proper documentation. Chicks must be handled carefully to minimize stress and injury, and equipment must be routinely inspected to prevent welfare breaches.

- Regulations highlight the need for accurate documentation of culling decisions and continuous monitoring of welfare practices. Any mishandling—such as live chicks identified in waste streams—is considered a major compliance violation and requires corrective training or action.
- In the European Union and other jurisdictions, laws are standardized to prevent avoidable suffering, mandating the use of approved gases or mechanical euthanasia methods. More recently, governments have begun enacting measures to restrict inhumane practices and shift toward alternatives such as in-ovo sexing.
- Rising public concern about animal welfare has intensified opposition to chick culling, with consumers and advocacy groups pushing the industry to adopt non-lethal solutions. Among these, in-ovo sexing—which determines chick sex before hatching—has gained recognition as a promising alternative.
- For hatcheries, the central challenge is balancing welfare responsibilities with economic demands and market expectations. To maintain public trust and uphold ethical standards, the industry must focus on transparency, strict adherence to humane protocols, and continued investment in technological innovation.

Mechanism: How CO_2 Induces Unconsciousness and Death

- CO_2 euthanasia operates through two main physiological effects: hypoxia (oxygen deprivation) and hypercapnia (excess carbon dioxide in the blood). When animals inhale high concentrations of CO_2, the following occurs:
- Carbon dioxide builds up in the bloodstream, causing acidification (lower blood pH), which triggers respiratory distress and rapid loss of consciousness.
- Rising CO_2 levels simultaneously reduce oxygen availability, causing hypoxia that further accelerates unconsciousness and ultimately leads to death.
- Visible signs such as loss of posture and insensibility occur relatively quickly after exposure, followed by cessation of breathing and, finally, cardiac arrest.

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- When applied correctly, CO_2 protocols induce unconsciousness before the onset of significant pain or distress.
- To minimize suffering, optimal procedures emphasize gradual introduction of CO_2 rather than sudden, high concentrations. Improper gas administration (such as bottom-filling chambers) increases observable distress behaviors, whereas top-fill systems or gradual displacement methods promote uniform distribution and reduce discomfort.

Chamber Design, Equipment, and Safety Protocols

- Chamber Design: Hatchery CO_2 chambers are sealed enclosures that allow controlled gas infusion. They range in size to accommodate single or multiple chicks. Gas enters from above to encourage gradual and even filling.
- Gas Monitoring: Real-time monitors track CO_2 levels, maintaining effective concentrations (generally 70-90%) to ensure euthanasia is swift but humane. Flow rates must be regulated to prevent distress.
- Ventilation Control: Valves regulate gas movement, preventing oxygen from re-entering during euthanasia. After use, exhaust systems release gas safely.

Safety Protocols for Effective and Humane Operation

- Regularly inspect chambers for airtight seals to prevent leakage.
- Use environmental CO_2 detectors to safeguard workers from accidental exposure.
- Ensure staff are fully trained in equipment use, emergency procedures, and welfare guidelines.
- Clean and maintain equipment routinely to uphold operational reliability and humane standards.

Standard Operating Procedures for CO_2 Euthanasia in Poultry

Prefill vs. Gradual Fill Approaches

Prefill Method (Immersion)

- In this method, the chamber is first filled with a high concentration of CO_2 (close to 100%) before chicks are placed inside.
- Birds are immediately exposed to an atmosphere saturated with CO_2, leading to rapid unconsciousness and death.
- This approach is generally considered more suitable for poultry, as it minimizes the prolonged distress sometimes observed with gradual filling.
- It does not require precise control of gas flow during euthanasia, but chambers must be cleared and cleaned between groups. Since CO_2 is heavier than air, it can accumulate at the bottom, causing uneven exposure if not properly managed.

Gradual Fill Method (Displacement)

- Here, CO_2 is introduced into the chamber at a steady rate while birds are already inside.
- AVMA guidelines recommend gas displacement rates of 10%-30% of chamber volume per minute, based mainly on rodent studies, to reduce discomfort during induction.
- However, for poultry, slower fill rates can cause hyperventilation or distress.
- Gradual filling is more commonly used for young swine, while poultry generally respond better to the prefill method.

Concentration and Exposure Guidelines

- CO_2 levels of 80%-100% are typically required to achieve humane and effective euthanasia in poultry.
- Newly hatched chicks can tolerate high CO_2 concentrations but usually need up to five minutes of exposure to ensure death.
- After unconsciousness occurs, gas flow should be maintained for at least 1-5 minutes, or until respiration, heartbeat, and reflexes have completely ceased.
- Death must always be manually confirmed; if there is any uncertainty, a secondary method such as cervical dislocation should be used.
- Chamber volume, gas concentrations, and flow rates must be accurately calculated to guarantee rapid and uniform displacement of air. Flow rates between 30%-70% of chamber volume per minute are commonly recommended.

Animal Welfare Outcomes

Behavioral Indicators of Distress and Insensibility

- Common behavioral signs observed during CO_2 euthanasia include:
  - Headshaking (HS) and gasping (GS): Reflect irritation and breathlessness, signaling distress prior to unconsciousness.
  - Loss of posture (LOP): Marks the onset of insensibility.
  - Cessation of rhythmic breathing (CRB): Indicates respiratory arrest.
  - Cessation of movement (COM): Confirms death.
- Research shows that immediate exposure (immersion) to high concentrations of CO_2 (90- 100%) leads to faster insensibility and death compared to gradual filling methods, while also shortening the duration and frequency of distress behaviors.
- Since distress behaviors appear at lower CO_2 levels than those required for unconsciousness, minimizing the time between exposure and loss of sensibility is critical, particularly for young chicks.

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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.

Comparative Effectiveness and Welfare Considerations

- CO_2 euthanasia (immersion method): Considered humane when carried out correctly, ensuring rapid unconsciousness and death.
- Maceration: Provides instantaneous death but is perceived as a more violent physical method, often subject to public criticism.
- Cervical dislocation: Effective if performed properly but requires expertise, with potential welfare issues if done incorrectly.
- Compared with alternatives, CO_2 euthanasia is less physically traumatic and adaptable to large-scale use, though distress during early exposure remains a welfare concern requiring refined protocols.

Practical Application in Hatcheries

Training and Handling Protocols

- Personnel must be trained to:
  - Identify signs of distress, unconsciousness, and death.
  - Safely operate CO_2 systems and follow emergency procedures.
  - Apply correct bird-handling practices to reduce pre-euthanasia stress.
- Backup methods such as cervical dislocation should always be available to ensure death when needed.

Scalability: Single-Bird vs. Mass Euthanasia

- CO_2 equipment can be adapted for different scales:
  - Small chambers: Suitable for individuals or small groups; allow precise monitoring.
  - Large chambers: Facilitate batch euthanasia, enhancing efficiency.
- Effective CO_2 distribution is crucial to ensure all animals are exposed consistently.
- Routine maintenance and calibration of equipment are essential for compliance with welfare standards and reliability of outcomes.

Legal, Ethical, and Social Aspects

Compliance with Local and International Regulations

- Poultry hatcheries are subject to strict national and international regulations that govern humane euthanasia practices.
- In the United States, guidelines from the American Veterinary Medical Association (AVMA) and the National Farm Animal Care Council (NFACC) set standards designed to reduce pain and distress, including protocols for CO_2 euthanasia of chicks.
- Within the European Union, unified regulations permit the use of methods such as mechanical grinding and CO_2 gassing. However, several EU member states—such as Germany, France, and Luxembourg— have introduced or are planning bans on chick culling, shifting instead toward alternatives like in-ovo sexing.
- Across regions, compliance requires strict adherence to welfare standards, transparent documentation, and accountability within hatchery operations.
- Addressing Public Concerns and Ensuring Transparency
- Public opposition to chick culling is increasing, mostly due to ethical debates over the mass killing of male and non-viable chicks.
- Hatcheries can help address these concerns by openly communicating their euthanasia methods, while also adopting and showcasing alternatives like in-ovo sex determination.
- In response to consumer demand and ethical scrutiny, industry leaders are increasingly investing in "no-kill" egg production and other innovative, welfare-friendly approaches.

Future Directions and Ongoing Research

Enhancing Welfare Monitoring

- Research is aimed at improving the accuracy of welfare assessment during euthanasia, with a focus on refined behavioral and physiological indicators such as the timing of distress and loss of consciousness.
- Emerging sensor-based and automated monitoring systems now allow for continuous, realtime tracking of animal welfare, making it possible to optimize euthanasia protocols more precisely.
- Development of Humane Alternatives
- In-ovo sexing technologies enable detection of chick sex before hatching, offering a major alternative that reduces or eliminates male chick culling.
- Genetic innovations, including CRISPR-based sex determination methods, are being explored as long-term solutions to prevent the hatching of unwanted male chicks.
- Researchers are also testing new gas mixtures and euthanasia technologies to achieve improvements in both animal welfare outcomes and operational practicality.

Together, these legal frameworks, societal demands, and scientific innovations reflect a strong and growing commitment to advancing animal welfare in hatcheries—ensuring practices meet both ethical expectations and evolving regulatory standards.

[1]Dr. Sayyed Mushtaque and [2]Dr. Akash Wadal
[1]General Manager-Breeder and Hatcheries
[2]Hatchery Coordinator - MH Region
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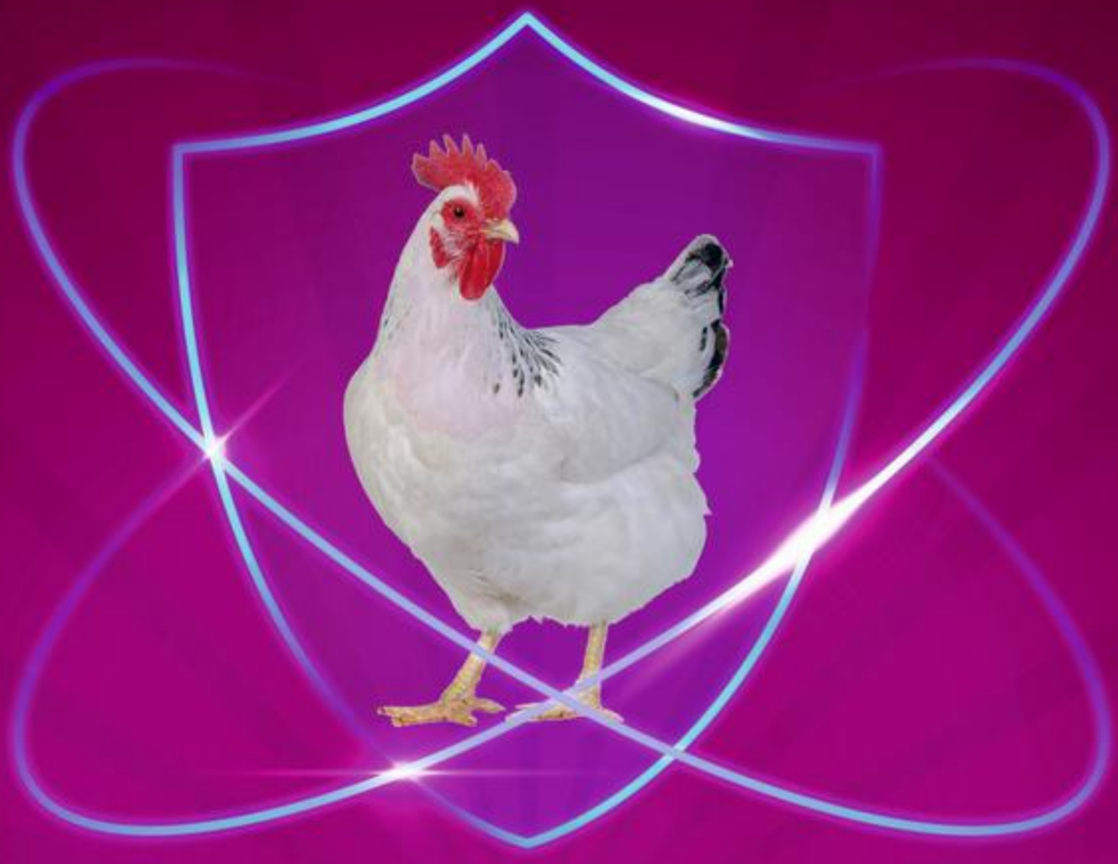

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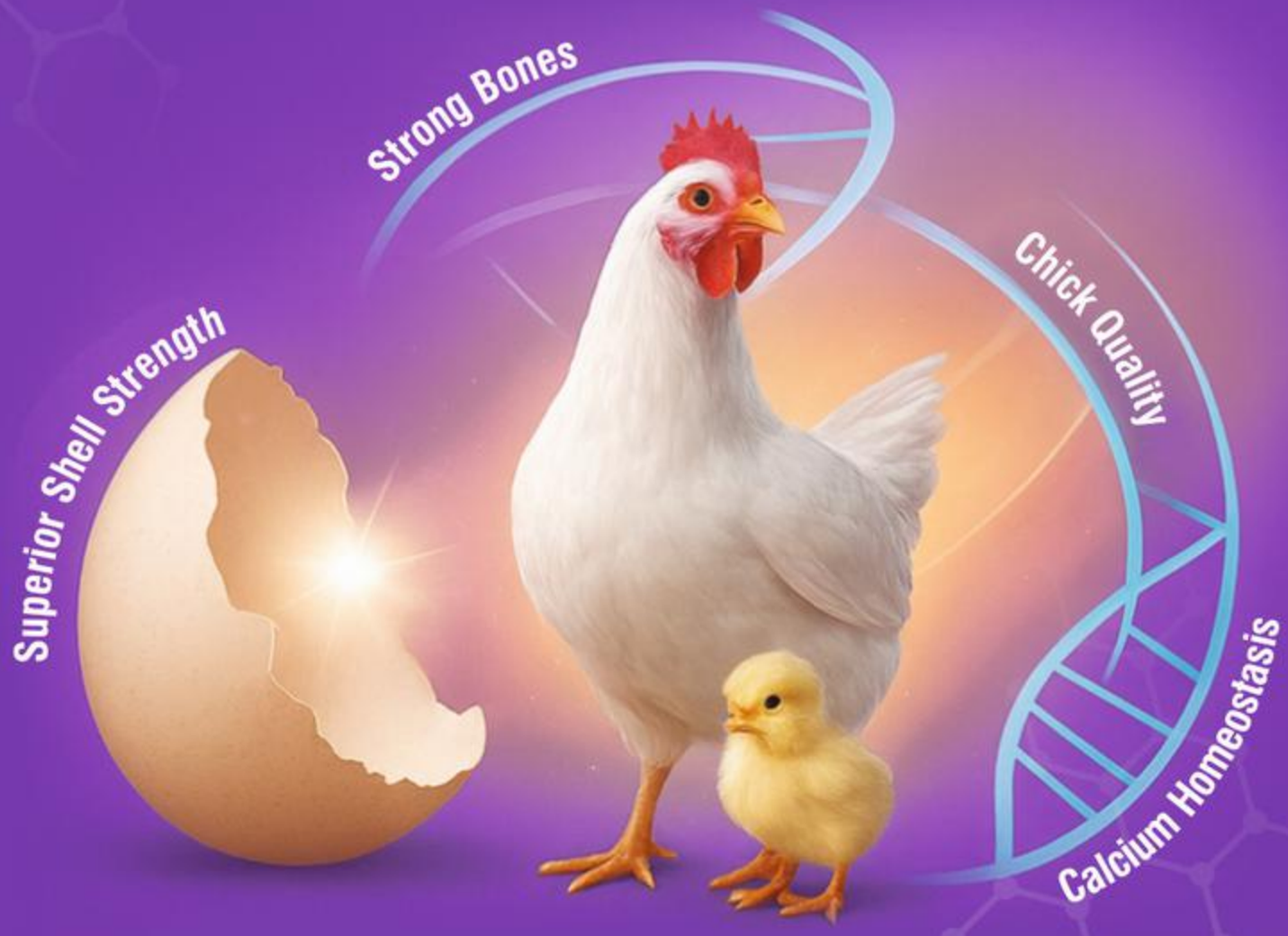

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RODEC Pharma Ltd. Appoints Dr. Srijit Tripathi

as General Manager — Techno Marketing

Mr. Mukesh Gupta, Managing Director RODEC and Dr. Maneesh Gupta, Strategic Business Advisor to RODEC Welcoming Dr. Srijit Tripathi on his appointment in RODEC as General Manager.

In a significant move designed to strengthen its leadership in the veterinary pharmaceutical sector, **Rodec Pharma Ltd.**, a leading veterinaryand animal health company headquartered in Ghaziabad, has announced the appointment of **Dr. Srijit Tripathi** as **General Manager - Techno Marketing.** With over a decade of experience in the animal health industry, Dr. Tripathi brings to RODEC a proven track record in International and domestic market from his prior tenures at Vetline and Ayurvet Limited, where he led strategic technical, marketing, product development and scientific outreach initiatives.

Dr. Tripathi holds an MVSc in Veterinary Medicine from G. B. Pant University of Agriculture & Technology. Throughout his career, he has contributed in diverse rolesand has represented his organizations at various national and international platforms, delivering seminars and expert talks across the industry. He has also published multiple papers and articles in reputable veterinary journals and industry magazines. His reputation as a thought leader in the field, combined with hands-on marketing and technical expertise, is expected to amplify RODEC's efforts in bridging research with market demands. In his new role, he will oversee the technical marketing strategy, liaise with research and development teamsand strengthen RODEC's scientific engagement across the industry.

RODEC Pharma was founded by its visionary Managing Director Mr. Mukesh Gupta in **1998** and is headquartered in the Meerut Road industrial area of Ghaziabad. RODEC is well known for its wide range of veterinary health products including analgesics, antibiotics, hormonal formulations, feed supplements, and therapeutics, and services a pan-India network of dealers and practitioners. The company has also introduced innovative and conceptual research-basedproducts and focuses on developing the poultry business as well. With Dr. Tripathi's appointment, the company aims to accelerate innovation, reinforce scientific credibility, and deepen its global reach across the livestock, Poultry and other related sectors. His addition to the leadership team underscores Rodec's commitment to combining scientific excellence with market effectiveness in achieving its vision — **"Healthy Animal, Wealthy Nation."**

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IPEMA – Poultry India strengthens unity and growth at the 36th AGM of the Poultry Federation of India

The *Indian Poultry Equipment Manufacturers' Association (IPEMA) - Poultry India* had the honour of supportingthe **36th Annual General Meeting of the Poultry Federation of India (PFI)**, held at *Ramada by Wyndham, Lucknow* on October 8-9, 2025. The two-day event, themed *"Survive & Thrive in Difficult Times,"* brought together leading stakeholders, policymakers, industry experts, and representatives from across India's vibrant poultry sector.

The AGM was presided over by **Mr. Ranpal Dhanda**, President, PFI, alongside **Mr. Sanjeev Gupta (Vice President-HQ)**, **Mr. Ravinder Singh Sandhu (Secretary)**, **Mr. Ricky Thaper (Joint Secretary)**, and **Mr. Rahul Khatri (Treasurer)**. The sessions featured insightful presentations, technical discussions, and panel dialogues addressing current challenges and strategies for sustainable industry growth.

IPEMA-Poultry India's Participation and Recognition

During the AGM, on Day 1, *Mr. Uday Singh Bayas*, **President, IPEMA - Poultry India**, highlighted the pivotal role of global exhibitions such as the *Poultry India Expo* in uniting diverse stakeholders on a common platform for innovation, collaboration, and capacity building. IPEMA-Poultry India was also **honoured with a memento of recognition** by the Poultry Federation of India for its continued contribution to the growth, innovation, and sustainability of India's poultry industry.

He emphasized that the upcoming expo aligns with *Prime Minister Narendra Modi's "Viksit Bharat 2047" vision* — fostering a self-reliant and globally respected poultry ecosystem built on innovation, sustainability, and inclusive growth.

"The Poultry India Expo is not just an exhibition; it is a movement — a platform that unites farmers, entrepreneurs, breeders, feed manufacturers, veterinarians, and students to exchange ideas, build collaborations, and shape the future of our industry," said Mr. Bayas.

"Together, we can strengthen India's poultry sector and make Poultry India Expo 2025 a proud milestone for our nation."

Invitation to Dignitaries and Upcoming Poultry India Expo 2025

On Day 2 of the AGM, Mr. Uday Singh Bayas, President, IPEMA - Poultry India, had the privilege of personally inviting distinguished dignitaries at the AGM to the upcoming 17th edition of the Poultry India Expo 2025, scheduled from **25-28 November 2025** at **HITEX, Hyderabad**. The invitees included:

- **Prof. S. P. Singh Baghel**, Hon'ble MoS for Animal Husbandry (Chief Guest)
- **Shri Mahipal Dhanda**, Hon'ble Minister of Education, Government of Haryana
- **Shri Brijesh Pathak**, Hon'ble Deputy Chief Minister, Government of Uttar Pradesh

Mr. Uday Singh Bayas was also part of the panel discussion on **Day 2 - October 9**, where he had the opportunity to discuss the magnitude and scale of the Poultry India Expo and how the event has been shaping the future of the poultry industry.

Invitation to Poultry India Expo 2025

IPEMA - Poultry India warmly invites all stakeholders, industry professionals, entrepreneurs, farmers, academicians, and policymakers to be part of the **17th Poultry India Expo 2025**. The upcoming edition promises to be the **largest and most impactful yet**, featuring **500+ exhibitors from over 50 countries**, welcoming **more than 50,000 visitors**, and spanning **seven exhibition halls across 35,000 square meters.**

The expo will showcase **cutting-edge technologies, innovations, and sustainable solutions** driving the future of poultry farming and agribusiness in India. It serves as a **premier platform for networking, knowledge exchange, and collaboration**, reinforcing India's vision for a **self-reliant and globally competitive poultry ecosystem.**

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Feed Passage Syndrome in Poultry

Dr Chandramohan
Chief Technical Officer, Neotle Global Private Limited

Feed passage syndrome, also known as "undigested feed passage," occurs when partially or fully undigested feed appears in the droppings of poultry. This condition is often a symptom of underlying gut health issues that disrupt digestion and nutrient absorption, and it can lead to reduced feed efficiency, slower growth, and other economic losses in poultry production.

Causes of Feed Passage Syndrome:

Several factors can contribute to feed passage in poultry, including:

1. **Dysbacteriosis:** An imbalance in the gut microbiota disrupts normal digestion as enzymes produced by the bacteria also aid in digestion of the nutrients in the gut. Hence, dysbacteriosis often leads to poor feed breakdown and undigested feed in droppings.
2. **Coccidiosis:** This intestinal parasite damages the gut lining, alters the structure of the gut, erodes the intestinal epithelium leading to reduced nutrient absorption and bloody diarrhoea with undigested feed particles.
3. **Feed Quality:** Diets with low nutrient density lacking in digestible nutrients or improperly formulated feed can overwhelm the digestive system, causing incomplete digestion. A balanced feed is required as over supply of nutrients is also detrimental to gut health and proper digestion.
4. **High Fiber Content:** Diets high in indigestible Fibers can speed up gut transit time, leading to feed passage syndrome.
5. **Mycotoxins/anti-nutritional factors:** Toxins produced by certain moulds or anti-nutritional factors present in the feed can cause inflammation of the gut lining and damage it , impairing digestion and nutrient uptake.
6. **Enzyme Deficiency:** Enzymes are crucial for breaking down feed components like proteins, fats, and carbohydrates. As the enzymes produced by the bird and bacterial enzymes produced by the gut microbiota are not enough, enzymes are also added as feed additives. Enzyme deficiency, whether due to diet or gut health issues, can lead to undigested feed.
7. **Stress and Rapid Transit Time:** Environmental stressors (e.g., high environmental temperature increases water consumption and thereby speeds up gut transit time), and sudden dietary changes also causes undigested feed to appear in the droppings.
8. **Hardness / Fineness of feed:** Inappropriate durability of the feed also causes changes in rate of gut movement leading to undigested feed in the droppings.
9. **Poor Bio-security:** If bio-security measures are not adequately adopted, the environmental bacterial load increases in the system that gets into the gut and thereby disturbs eubiosis, Ultimately, the gut health is impaired due to increased load of pathogens and leading to high quantity of undigested feed passage.

Clinical Signs of Feed Passage Syndrome:

Birds with feed passage syndrome exhibit specific symptoms, including:

- **Undigested Feed in Droppings:** This is the most characteristic sign, with noticeable feed particles like grains and fiber appearing in feces.
- **Diarrhoea and Wet Droppings:** Watery feces are common, as poor digestion often leads to intestinal inflammation, increased water consumption and faster passage through the gut.
- **Poor Growth and Feed Conversion:** Since nutrients are not fully absorbed, affected birds will suffer from deficiency of required nutrients and hence, will show reduced growth rates/ require more feed to gain weight leading to poor feed conversion efficiency.
- **Increased Feed Intake with No Weight Gain:** Birds may eat more to compensate for the lack of nutrient absorption, but this does not lead to the expected weight gain.
- **Dirty birds, discolored feathers, increase in water:** feed ratio, wet litter, poor air quality, uneven growth, increased mortality etc.,

Economic Impacts:

Feed passage syndrome can result in severe economic challenges:

1. **Increased Production Cost:** Due to feed passage wastage of feed and nutrients through faeces is more and birds take further more feed to meet out its requirements and for performance which ultimately increases production cost
2. **Reduced Growth Rates:** Affected broilers may take longer to reach market weight, which can disrupt production schedules
3. **Poor litter Quality:** Watery droppings will lead to poor litter and air quality, due to excess ammonia production and bacterial load in the environment, higher level of culls and increased mortality.
4. **Healthcare and Management Costs:** Managing underlying causes, such as coccidiosis or dysbacteriosis, may require medication, additional biosecurity measures, better supervision and more labor.


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Normal dropping

Dropping with undigested feed

Dropping with undigested feed & orange mucous

Watery dropping with undigested feed & orange mucous

5. Poor Meat and Egg Quality: Birds experiencing malnutrition due to poor nutrient absorption may produce lower-quality meat and eggs which will bring down their grades in the market leading to less monetary realisation.

Management and Prevention Strategies:

Addressing feed passage syndrome requires identifying and managing the underlying causes. Here are some key approaches:

1. **Optimize Diet Formulation:** Ensuring balanced, high-quality feed with digestible protein, fat and carbohydrates with adequate levels of vitamins, minerals and any other gut health enhancers can reduce the risk of feed passage.
2. **Use of Enzymes:** Adding enzymes like Xylanases or Proteases or any other carbohydrases that can improve digestion, especially if there are ingredients in the feed that poultry struggle to digest as even under normal circumstances, only 80-90% of feed ingredients are digested.
3. **Coccidiosis control:** Implementing an appropriate coccidiostat management program can protect gut integrity and improve nutrient absorption. One has to show extreme caution in selection of anti-coccidial chemicals keeping in mind the need to follow a rotation policy and also possible interactions with other additives being used.
4. **Improve Gut Health with Additives:** Feed additives like gut health enhancers can support a balanced microbiome in the gut and improve its health as bacterial enzymes produced by favourable bacteria aid in digestion and bacterial toxins produced by pathogenic bacteria cause inflammation of the gut and impair digestion.
5. **Broad spectrum natural Bio-polymer:** Concept of the bio-polymer with broad spectrum anti-bacterial, anti-inflammatory and immune modulation properties is getting popular in reducing gut impairment and tackling feed passage syndrome.
6. **Reduce Stress and Environmental Factors:** Managing temperature, ventilation, stocking density, and other stressors effectively can help maintain stable digestion and reduce transit time issues.
7. **Monitor and Control Mycotoxins:** Effective monitoring of feed ingredients quality and their storage conditions, using mycotoxin binders in feed etc., can prevent mycotoxicosis and the associated gut damage.

Conclusion:

Feed passage syndrome is a sign of impaired digestion and nutrient absorption, often due to underlying gut health issues or dietary imbalances. Managing this condition through diet optimization, gut health support, and preventive measures can help improve feed conversion, promote growth, and reduce economic losses in poultry production. Early intervention and routine monitoring are essential to maintain a healthy flock and efficient production system.

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Usage:

- Prevents fatty liver syndrome (FLS) and fatty infiltration, improves the integrity of hepatocytes, and optimizes liver function.
- Reduces carcass fat content and promotes lean meat production.
- Optimizes growth, feed conversion rate (FCR), egg production, livability, and hatchability.
- Aids in maintaining brain and nerve nutrition and improves neurotransmission.
- Helps prevent perosis and leg weakness.
- Assists in optimizing lipid and carbohydrate metabolism and improves energy utilization.

*Creative Visualization

Mixing Ratio:

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

*500 g of HimChol-P can replace 1 kg of synthetic choline chloride (60%)

#Compared to similar products in market

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www.himalayawellness.com
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Scan for more info on HimChol-P

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HARGUN AGRO PROUDLY PARTICIPATED AS PLATINUM SPONSOR IN THE PFI (POULTRY FEDERATION OF INDIA)'S 36TH AGM

Hargun Agro proudly participated as a Platinum Sponsor at the Poultry Federation of India's 36th Annual General Meeting in Lucknow.

Mr. Charuhas Gogate (General Manager-Hargun Agro) shared key insights on the vegetable oils sector, addressing supply chain challenges, price volatility, and India's high import dependency.

He emphasized that greater focus on domestic processing and value addition can reduce vulnerabilities, stabilize prices, and strengthen economic resilience.

Dr. Rahul Kulkarni (Director, Hargun Agro and Symbio Nutrients) highlighted the extra-calorific benefits of oils in layer and breeder diets, showcasing their role in improving poultry health and productivity.

Hargun Agro continues to drive progress in India's poultry sector through innovation, nutritional excellence, and sustainable practices—empowering farmers and advancing national food security.

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Body weight at 20 weeks	2345 - 2425 g	
Body weight at 64 weeks	4080 - 4140 g	
HE/HH at 64 weeks	180.1	
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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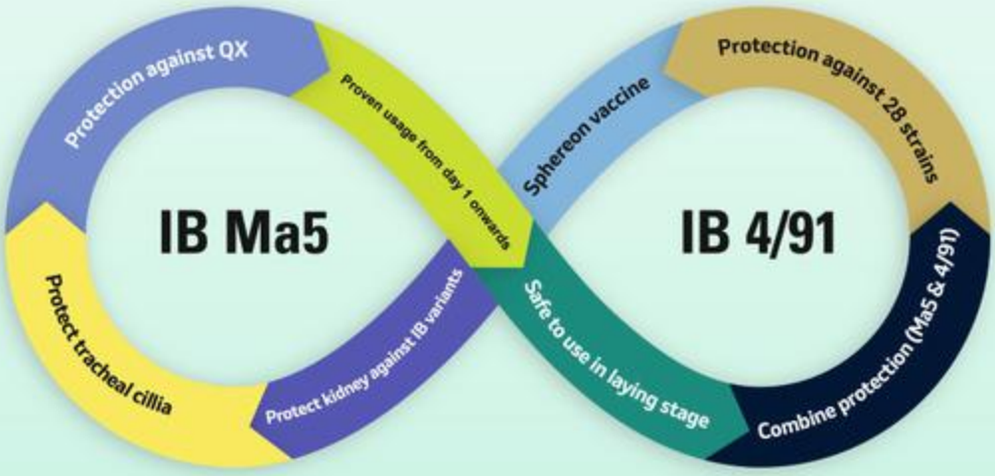

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