

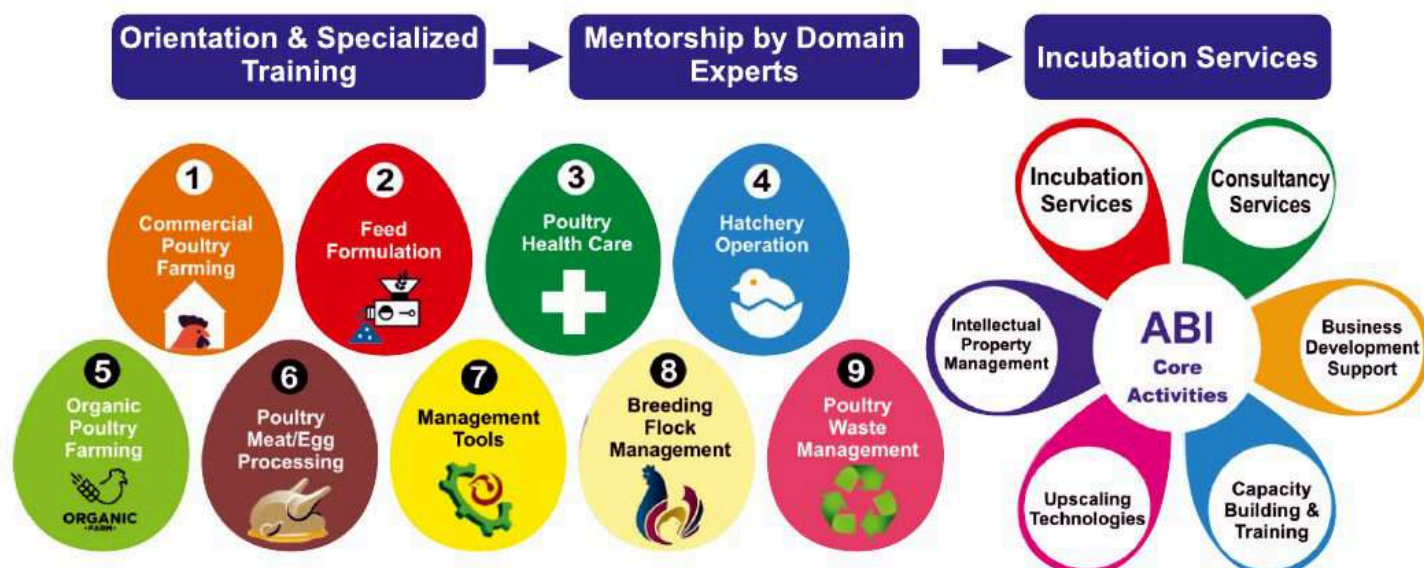
ANNUAL REPORT 2025



भाकृअनुप-केन्द्रीय पक्षी अनुसंधान संस्थान
इज्जतनगर - 243122, बरेली (उ.प्र.) भारत
ICAR-CENTRAL AVIAN RESEARCH INSTITUTE
IZATNAGAR- 243122 (UP) INDIA

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- Project report formulation, Statutory compliance, Marketing format design, Marketing strategies, Social media platform, Client feedback analysis



वार्षिक प्रतिवेदन 2025

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ICAR-CENTRAL AVIAN RESEARCH INSTITUTE

IZATNAGAR- 243 122 (UP) INDIA

ICAR-CARI Annual Report 2025

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Head of Institution : Dr Jagbir Singh Tyagi, Director

Compiled & Edited By: Dr Gautham Kolluri
Dr Mohd. Matin Ansari
Dr Sandeep Saran

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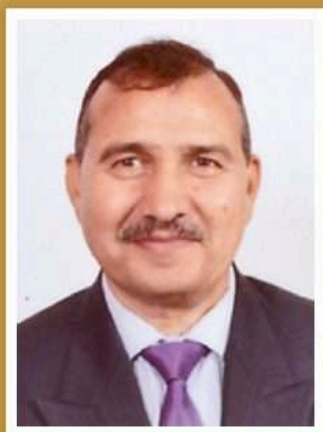
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Preface



Jagbir Singh Tyagi
Director (A)

ICAR-Central Avian Research Institute
Izatnagar-243 122 (UP) India

The Annual Report 2025 of the ICAR–Central Avian Research Institute (CARI), Izatnagar, chronicles a year of substantial progress in poultry research, technological innovation, and outreach. It underscores our unwavering commitment to advancing sustainable livestock production, strengthening nutritional security, building climate resilience, and empowering rural livelihood enhancement.

During the year, the Institute achieved notable progress in the genetic improvement of poultry species through sustained breeding and selection programmes. Improved germplasm developed at CARI demonstrated enhanced productivity, reproductive efficiency, hatchability, and adaptability. Our research further advanced reproductive biotechnology, nutritional interventions, climate-smart production systems, and food safety protocols. The development of novel value-added poultry products has opened new avenues for agri-entrepreneurship and diversified income generation for farmers.

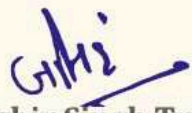
Technology dissemination remained central to our mission. Leveraging Government of India initiatives such as DAPSC, DAPST, and NEH programmes, we successfully disseminated high-quality poultry germplasm and technical know-how to a vast network of farmers and rural beneficiaries across the country. Strategic emphasis on capacity-building, technology commercialization, intellectual property generation, and industrial partnerships has catalysed innovation and self-reliance in the poultry sector.

Human resource development continued to be a priority, with tailored training programmes conducted for scientists, veterinarians, entrepreneurs, and farmers. Our active participation in the Viksit Krishi Sankalp Abhiyan and observance of important national and institutional events reaffirmed our dedication to scientific literacy, environmental stewardship, and community engagement.

The accomplishments presented in this report are a testament to the collective dedication and professionalism of our scientists, technical officers, administrative staff, skilled workers, and students. We extend our deepest gratitude to Dr. Himanshu Pathak, former Secretary, DARE and Director General, ICAR, and Dr. M. L. Jat, Secretary, DARE and Director General, ICAR, for their visionary leadership and steadfast encouragement. We also sincerely appreciate the invaluable guidance of Dr. Raghavendra Bhatta, Deputy Director General (Animal Science), and Dr. Gyanendra Kumar Gaur, Assistant Director General (Animal Production & Breeding). The continued cooperation of our collaborating institutions, industry partners, and all stakeholders has been instrumental in advancing our research, education, and technology dissemination objectives.

We trust that this Annual Report will serve as a vital resource for policymakers, researchers, extension personnel, entrepreneurs, and students, reflecting our relentless pursuit of scientific excellence and our enduring resolve to strengthen India's poultry industry.

Annual Report -2025


(Jagbir Singh Tyagi)
Director (A)





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1. कार्यकारी सारांश

कार्यक्रम-1: चयनित कुक्कुट प्रजातियों में उत्पादकता वृद्धि

- कैरीउत्तम में कारीब्राउन तथा कारीसुनेहरी की तुलना में सर्वाधिक हैचेबिलिटी (47.03%) तथा न्यूनतम मृत्यु दर (5.89%) दर्ज की गई।
- एग-लेइंग (अंडा उत्पादन) किस्मों में कारीब्राउन ने नियंत्रण समूह की तुलना में कम आयु में लैंगिक परिपक्वता प्राप्त की (43.67 बनाम 57.33 दिन) तथा 18 सप्ताह की आयु तक अधिक अंडों का उत्पादन किया (42 बनाम 31 अंडे), जो इसकी उत्कृष्ट अंडा उत्पादन क्षमता को दर्शाता है।
- चयनित टर्की लाइन में 80.09% प्रजनन क्षमता (Fertility) तथा 64.97% हैचेबिलिटी (फर्टाइल अंडों के आधार पर – FES) दर्ज की गई, जबकि नियंत्रण लाइन में क्रमशः 78.75% प्रजनन क्षमता तथा 59.09% हैचेबिलिटी दर्ज की गई।
- 22 वीं पीढ़ी की चयनित ब्रॉयलर लाइनों, कलर्ड सिंथेटिक नर लाइन (CSML) एवं कलर्ड सिंथेटिक मादा लाइन (CSFL) में फर्टाइल अंडों के आधार (FES) पर क्रमशः 83.93% एवं 80.99% हैचेबिलिटी दर्ज की गई। इनका 5 सप्ताह की आयु पर औसत शरीर भार क्रमशः CSML में 1054.72 ± 6.44 ग्राम तथा CSFL में 1049.88 ± 7.52 ग्राम रहा।
- कैरीलालिमा (CL) एवं असील पीला (AP) के द्वितीय पीढ़ी के संकरण (CL×AP एवं AP×CL) ने औसतन 162.22 ± 0.84 दिनों में लैंगिक परिपक्वता प्राप्त की। आंशिक उत्पादन (40 सप्ताह की आयु तक) प्रति पक्षी औसतन 92.80 ± 1.46 अंडे दर्ज किया गया।
- मुर्गियों में फर्टाइल अंडों के आधार (FES) पर हैचेबिलिटी क्रमशः लेयर में 73.21%, ब्रॉयलर में 70.18% तथा देसी मुर्गियों में 68.61% रही। जबकि जापानी बटेर, गिनी फाउल तथा टर्की में यह क्रमशः 43.79%, 59.50% तथा 42.61% दर्ज की गई।
- क्रायो-संरक्षित (Cryopreserved) चिकन प्राइमॉर्डियल जर्म कोशिकाओं (PGCs) में 20 दिनों के भंडारण के बाद 30% तथा 45 दिनों के बाद 5% तक पुनर्जीवन (Revival) दर प्राप्त हुई। साथ ही, डिज़ाइन किए गए गाइड RNA युक्त क्रिसपर प्लास्मिड का सफल ट्रांसफेक्शन एवं जीनोमिक एकीकरण भी किया गया।
- कैरी द्विउद्देशीय (Dual-purpose) मुर्गियों के लिए स्टार्टर (0–4 सप्ताह) एवं ग्रोअर (5–15 सप्ताह) चरणों की पोषण आवश्यकताओं का निर्धारण किया गया। स्टार्टर चरण के लिए 2600 किलो कैलोरी/किग्रा मेटाबोलाइजेबल ऊर्जा (ME), 20% क्रूड प्रोटीन (CP), 0.96% लाइसीन, 0.38% मेथियोनीन तथा 0.80% थेओनीन का स्तर सर्वोत्तम पाया गया। ग्रोअर चरण में 3000 किलो कैलोरी/किग्रा ME, 18% CP, 0.83% लाइसीन, 0.35% मेथियोनीन एवं 0.71% थेओनीन युक्त आहार ने वृद्धि, प्रतिरक्षा प्रतिक्रिया, कार्कस उत्पादन, मांस की गुणवत्ता एवं संरचना, सीरम जैवरासायनिक प्रोफ़ाइल, पोषक तत्वों के उपयोग तथा आर्थिक लाभ में सर्वोत्तम परिणाम दिए।
- कैरीनिर्भक (CARINIRBHEEK) एवं कैरीश्यामा (CARISHYAMA) मुर्गियों में क्रमशः 26–40 तथा 30–44 सप्ताह की आयु के दौरान अंडा उत्पादन के लिए 2500 किलो कैलोरी/किग्रा ME, 13% CP, 0.74% लाइसीन, 0.34% मेथियोनीन एवं 0.49% थेओनीन युक्त आहार सर्वोत्तम पाया गया।
- अनुबंध अनुसंधान परियोजना के अंतर्गत पोल्ट्री ब्रीडर फार्मों में उष्णकटिबंधीय खटमल (cinexhemipterus) के नियंत्रण हेतु नियोनिकोटिनाइड-पाइरेथ्रोइड आधारित दो द्वि-क्रियाशील कीटनाशी फॉर्मूलेशनों का प्रयोगशाला एवं क्षेत्रीय परिस्थितियों में मूल्यांकन किया गया।
- कैरी फार्म में विभिन्न कुक्कुट प्रजातियों को कुल 3,43,500 वैक्सीन खुराकें दी गईं। टीकाकरण कार्यक्रम में 1,39,000 खुराक जीवित क्षीणीकृत न्यूकैसल रोग (ND) वैक्सीन, 74,000 खुराक इंटरमीडिएट स्ट्रेन संक्रामक बर्सल रोग (IBD) वैक्सीन, 77,000 खुराक मैरेक्स रोग (MD) वैक्सीन (HVT-3), 21,000 खुराक मेसोजेनिक स्ट्रेन NDV (R2B) तथा 31,000 खुराक फाउल पॉक्स वैक्सीन की दी गईं। इसके अतिरिक्त, ब्रीडर पक्षियों को 1,500 खुराक द्वि-उद्देशीय ND-IBD वैक्सीन दी गई। "नो एंटीबायोटिक्स एवर" पहल के अनुरूप संस्थान ने एंटीबायोटिक ग्रोथ प्रमोटर (AGP) रहित पोल्ट्री आहार को अनिवार्य रूप से अपनाया।
- 200 से अधिक पोल्ट्री फीड नमूनों का निकटस्थ रासायनिक संरचना (Proximate Composition), खनिज तत्वों, मिलावट (Adulterants) तथा माइकोटॉक्सिन की उपस्थिति के लिए विश्लेषण किया गया।

कार्यक्रम-2: जलवायु-सहिष्णु (Climate Resilient) कुक्कुट उत्पादन प्रणाली एवं अपशिष्ट प्रबंधन

- जापानी बटेर के भ्रूणों में ऊष्मायन (Incubation) के 12वें से 14वें दिन तक 40°C पर भ्रूणीय तापीय अनुबंधन (Embryonic Thermal Conditioning –ETC) करने से डीएनए मिथाइलेशन से संबंधित जीन (DNMT1 एवं DNMT3A) की अभिव्यक्ति में हैचिंग के समय तथा छह सप्ताह की आयु पर उल्लेखनीय कमी (डाउन-रेगुलेशन) देखी गई। इसके विपरीत, डीएनए डी-मिथाइलेशन से संबंधित जीन (MBD4 एवं GADD45a) की अभिव्यक्ति में गतिशील परिवर्तन पाए गए। हैचिंग के समय MBD4 की अभिव्यक्ति में उल्लेखनीय वृद्धि हुई, जबकि छह सप्ताह की आयु पर भ्रूणीय तापीय अनुबंधन समूह में MBD4 तथा GADD45a दोनों की अभिव्यक्ति नियंत्रण समूह की तुलना में उल्लेखनीय रूप से अधिक पाई गई।
- छोटे आकार (<10 ग्राम) के जापानी बटेर के अंडों में नमी की हानि सर्वाधिक (9वें एवं 15वें भ्रूणीय विकास दिवस पर क्रमशः 9.38% एवं 15.45%) तथा सापेक्ष भ्रूण भार भी सर्वाधिक (क्रमशः 12.98% एवं 58.37%) दर्ज किया गया। हैच समकालिकता (Hatch Synchronization) से हैचिंग अवधि लगभग आधी (49 घंटे के स्थान पर 26 घंटे) रह गई, विभिन्न आकार के अंडों में एकरूपता में सुधार हुआ तथा अधिक समान गुणवत्ता वाले चूजे प्राप्त हुए।
- विभिन्न वृद्धि क्षमता वाले ब्रॉयलर पक्षियों को चक्रीय ऊष्मा तनाव (Cyclical Heat Stress) देने पर ऊष्मा सहनशीलता में नस्ल-विशिष्ट स्पष्ट अंतर पाए गए। धीमी वृद्धि वाली कैरीदेबेन्द्रा (CARIDEBENDRA) तथा मध्यम वृद्धि वाली कैरीब्रोधनराजा (CARIBRODHANARAJA) नस्लों में तीव्र वृद्धि वाली VENCobb430Y (COBB) की तुलना में अधिक एंटीऑक्सीडेंट क्षमता, बेहतर प्रतिरक्षा प्रतिक्रिया तथा हीट-शॉक एवं एंटीऑक्सीडेंट जीनों की अधिक अभिव्यक्ति पाई गई, जिसके परिणामस्वरूप उनमें ऊष्मा तनाव के प्रति अधिक सहनशीलता देखी गई।

कार्यक्रम-3: मूल्य संवर्धन, खाद्य सुरक्षा, गुणवत्ता आश्वासन एवं उत्पाद विकास

- अंडा पाउडर एवं विटामिन-ई को मिश्रित करके उच्च-प्रोटीन युक्त अंडा-आधारित चकली विकसित की गई, जिसमें 26.56% प्रोटीन पाया गया। यह उत्पाद सामान्य वायुमंडलीय पैकेजिंग में 90 दिनों तथा संशोधित वायुमंडलीय पैकेजिंग (Modified

Atmosphere Packaging) में 180 दिनों तक सुरक्षित पाया गया।

- अंडा-आधारित दो अभिनव पेयों (एक संपूर्ण अंडे पर आधारित तथा दूसरा अंडे की एल्ब्यूमिन पर आधारित) का सफलतापूर्वक मानकीकरण किया गया, जिसमें कोको फ्लेवर को सर्वाधिक स्वीकार्य स्वाद के रूप में पहचाना गया। विस्तृत विश्लेषण से इनकी पोषण गुणवत्ता एवं ऑक्सीडेटिव स्थिरता की पुष्टि हुई तथा काँच की पैकेजिंग में भंडारण अवधि 13–15 दिनों तक पाई गई।

कार्यक्रम-4: मानव संसाधन विकास (HRD), बाजार विश्लेषण एवं प्रौद्योगिकी प्रसार

- अनुसूचित जाति विकास कार्ययोजना (DAPSC) के अंतर्गत 15 प्रशिक्षण-सह-जागरूकता कार्यक्रम तथा दो कुक्कुट मेले आयोजित किए गए, जिनसे अनुसूचित जाति (SC) के 3,205 प्रतिभागियों को कुक्कुट, बकरी एवं सूअर पालन के क्षेत्र में क्षमता निर्माण का लाभ मिला। 72 गाँवों के 1,325 लाभार्थियों को 14,489 कैरी चूजे, 17,725 किलोग्राम कुक्कुट आहार, 60 बकरियाँ, 16 सूअर, 110 सिलाई मशीनें, 21 सौर पैनल तथा आजीविका सहायता किट वितरित किए गए। अतिरिक्त आय सृजन को बढ़ावा देने के लिए मुख्यतः महिलाओं को शामिल करते हुए 152 सदस्यों के 15 स्वयं सहायता समूह (SHG) गठित किए गए। चिक मंदर यूनिट (CMU) के अंतर्गत 12,561 चूजों का पालन-पोषण कर अनुसूचित जाति के लाभार्थियों को उपलब्ध कराया गया, जिससे सतत आजीविका के अवसरों को सुदृढ़ किया गया।
- अनुसूचित जाति विकास कार्य योजना (DAPST) कार्यक्रम के अंतर्गत 14 गाँवों के 890 अनुसूचित जनजाति (ST) लाभार्थियों को शामिल किया गया। कुल 13 प्रशिक्षण-सह-जागरूकता कार्यक्रम आयोजित किए गए, जिनका मुख्य उद्देश्य कुक्कुट उत्पादन एवं बकरी पालन को बढ़ावा देना था। सात गाँवों के 306 लाभार्थियों को 5,855 कैरी चूजे, 7,650 किलोग्राम मिश्रित कुक्कुट आहार, 35 बकरियाँ, 271 किलोग्राम खनिज मिश्रण, 271 बाँस के शोड तथा अन्य बैकयार्ड पोल्ट्री सामग्री वितरित की गई।
- अनुसूचित जाति एवं अनुसूचित जनजाति विकास कार्ययोजना परियोजनाओं (उत्तराखंड के ऊधम सिंह नगर तथा उत्तर प्रदेश के बरेली जनपद) के परियोजना क्षेत्र में कैरीनिर्भक (CARINIRBHEEK) एवं कैरीश्यामा (CARISHYAMA) नस्लों के आर्थिक प्रभाव का मूल्यांकन प्रोपेन्सिटी स्कोर मैचिंग तकनीक

द्वारा किया गया। अध्ययन में इन नस्लों का सकारात्मक एवं सांख्यिकीय रूप से महत्वपूर्ण प्रभाव पाया गया, जिसमें अंडा उत्पादन अवधि के दौरान प्रति मुर्गी लगभग 26 अतिरिक्त अंडों का उत्पादन, ₹387 प्रति पक्षी का शुद्ध लाभ तथा मांस से ₹63 प्रति पक्षी की अतिरिक्त आय दर्ज की गई।

- उत्तर पूर्वी पर्वतीय क्षेत्र कार्यक्रम (NEH) के अंतर्गत नागालैंड में दो कुक्कुट पालन कार्यशालाएँ, एक जागरूकता शिविर तथा चार कुक्कुट स्वास्थ्य शिविर आयोजित किए गए। लाभार्थियों को 1,750 कैरी उन्नत जर्मप्लाज्म पक्षी एवं 5 टन कुक्कुट आहार वितरित किया गया। इसके अतिरिक्त, कुक्कुट पालन विषय पर वैज्ञानिक-किसान संवाद कार्यक्रम का आयोजन भी किया गया।
- कृषि व्यवसाय ऊष्मायन (Incubation) परियोजना (ABI) परियोजना के अंतर्गत विचार (Ideation) चरण में छह नए इनक्यूबेट्स को शामिल किया गया तथा संस्थान की प्रौद्योगिकी सूची में पाँच नई प्रौद्योगिकियाँ जोड़ी गईं। दो प्रसंस्करण प्रौद्योगिकियों तथा एक फीड फॉर्मूलेशन सॉफ्टवेयर (MAKEFEED POULTRY) का दो औद्योगिक भागीदारों के साथ औपचारिक प्रौद्योगिकी लाइसेंसिंग समझौतों के माध्यम से हस्तांतरण एवं व्यावसायीकरण किया गया।
- संस्थान ने दो कॉपीराइट तथा एक डिज़ाइन आवेदन दायर किए, जबकि एक कॉपीराइट का सफलतापूर्वक पंजीकरण भी कराया गया। इसके अतिरिक्त, कुक्कुट जर्मप्लाज्म की आपूर्ति हेतु 31 समझौता ज्ञापनों (MEMORANDUM OF UNDERSTANDING)

पर हस्ताक्षर किए गए।

- मानव संसाधन विकास (HRD) के अंतर्गत कुल 51 प्रशिक्षण कार्यक्रम आयोजित किए गए, जिनमें 50 राष्ट्रीय तथा 1 अंतरराष्ट्रीय कार्यक्रम शामिल था। इन कार्यक्रमों से कुल 4,271 प्रतिभागियों को लाभ प्राप्त हुआ। इनमें से 43 कार्यक्रम संस्थान परिसर में आयोजित किए गए, जबकि शेष 8 कार्यक्रम प्रायोजित (Sponsored) थे।

अन्य गतिविधियाँ

- संस्थान ने 76वें गणतंत्र दिवस, 79वें स्वतंत्रता दिवस, 156वीं गांधी जयंती तथा संस्थान के 46वें स्थापना दिवस सहित विभिन्न राष्ट्रीय एवं संस्थागत अवसरों का गरिमापूर्ण आयोजन किया।
- संस्थान ने स्वच्छता जागरूकता अभियान, स्वच्छता पखवाड़ा, विश्व अंडा दिवस, विश्व पशु चिकित्सा दिवस, अंतरराष्ट्रीय योग दिवस, शिक्षक दिवस, विश्व पर्यावरण दिवस, सतर्कता जागरूकता सप्ताह, विश्व बौद्धिक संपदा (आईपी) दिवस तथा किसान दिवस जैसे विभिन्न महत्वपूर्ण अवसरों का सक्रिय रूप से आयोजन किया।
- संस्थान ने उत्तर प्रदेश के पीलीभीत जनपद में आयोजित विकसित कृषि संकल्प अभियान में सक्रिय सहभागिता करते हुए किसानों को कृषि, पशुपालन एवं कुक्कुट पालन से संबंधित विभिन्न क्षेत्रीय (ऑन-फील्ड) चुनौतियों के समाधान हेतु वैज्ञानिक जानकारी एवं तकनीकी मार्गदर्शन प्रदान किया।



1. Executive Summary

PROGRAMME-1: PRODUCTIVITY ENHANCEMENT OF SELECTED POULTRY SPECIES

- CARIUTTAM recorded the highest hatchability (47.03%) and the lowest mortality (5.89%) than CARIBROWN and CARISUNEHRI.
- Among the egg-type varieties, CARIBROWN attained sexual maturity significantly earlier than the control (43.67 vs. 57.33 days) and produced more eggs up to 18 weeks of age (42 vs. 31 eggs), demonstrating its superior laying performance.
- The selected turkey line recorded 80.09% fertility and 64.97% hatchability on a fertile egg set (FES) basis, compared with the control line, which recorded 78.75% fertility and 59.09% hatchability.
- The selected broiler lines, CSML and CSFL, in the 22nd generation recorded hatchability of 83.93% and 80.99%, respectively, on a fertile egg set (FES) basis. The corresponding 5-week body weights were 1054.72 ± 6.44 g in CSML and 1049.88 ± 7.52 g in CSFL.
- The second-generation crosses of CARILALIMA (CL) and Aseel Peela (AP) (CL×AP and AP×CL) attained sexual maturity at an average age of 162.22 ± 0.84 days. Based on part-record egg production up to 40 weeks of age, the birds recorded an average of 92.80 ± 1.46 eggs per bird.
- The hatchability on a fertile egg set (FES) basis in chickens was 73.21% in layers, 70.18% in broilers, and 68.61% in desi fowl. In Japanese quail, guinea fowl, and turkey, it was recorded as 43.79%, 59.50%, and 42.61%, respectively.
- Cryopreserved chicken primordial germ cells (PGCs) exhibited revival rates of up to 30% after 20 days of storage and 5% after 45 days of storage. Furthermore, successful transfection and integration of CRISPR plasmids carrying the designed guide RNAs were achieved.
- As part of a package of practices, the nutrient requirements for CARI dual-purpose chickens were determined for the starter (0–4 weeks) and grower (5–15 weeks) phases. For the starter phase, dietary levels of 2600 kcal/kg

metabolizable energy (ME), 20% crude protein (CP), 0.96% lysine, 0.38% methionine, and 0.80% threonine were found to be optimal. During the grower phase, a diet containing 3000 kcal/kg ME, 18% CP, 0.83% lysine, 0.35% methionine, and 0.71% threonine supported optimal growth performance, immune response, carcass yield, meat quality and composition, serum biochemical profile, nutrient utilization, and economic returns.

- A dietary level of 2500 kcal/kg ME, 13% CP, 0.74% lysine, 0.34% methionine, and 0.49% threonine was found optimal for egg production in CARINIRBHEEK and CARISHYAMA hens during 26–40 and 30–44 weeks of age, respectively.
- Two dual-active neonicotinoid-pyrethroid insecticidal formulations were evaluated under laboratory and field conditions for the control of *Cimex hemipterus* (tropical bed bug) in poultry breeder farms under a contract research project.
- A total of 343,500 vaccine doses were administered to various poultry species at the CARI farm. The vaccination schedule comprised 139,000 doses of live attenuated Newcastle Disease (ND) vaccine; 74,000 doses of intermediate strain Infectious Bursal Disease (IBD) vaccine; 77,000 doses of Marek's Disease (MD) vaccine (HVT-3); 21,000 doses of mesogenic strain of NDV (R2B); and 31,000 doses of fowl pox vaccine. Additionally, breeders received 1,500 doses of a dual ND–IBD vaccine. In line with the "No Antibiotics Ever" initiative, the Institute mandatorily adopted antibiotic growth promoter (AGP)-free poultry feed formulations.
- Over 200 poultry feed samples were analysed for proximate composition, mineral content, adulterants, and mycotoxins.

PROGRAMME-2: CLIMATE-RESILIENT POULTRY PRODUCTION SYSTEM AND WASTE MANAGEMENT

- Embryonic thermal conditioning (ETC) of Japanese quail embryos at 40°C from days 12 to 14 of incubation led to a significant

downregulation of the DNA methylation-related genes (*DNMT1* and *DNMT3A*), observed both at hatch and at six weeks of age. In contrast, the expression of DNA demethylation-related genes (*MBD4* and *GADD45a*) showed a dynamic pattern: *MBD4* was significantly upregulated at hatch, and at six weeks, both *MBD4* and *GADD45a* were significantly upregulated in the ETC group compared to the control.

- Small (<10 g) Japanese quail eggs had the highest moisture loss (9.38% and 15.45% at 9 and 15 EDD) and the highest relative embryo weight (12.98% and 58.37% at 9 and 15 EDD). Hatch synchronisation reduced the hatch window by nearly half (26 vs. 49 hours), improved uniformity across egg sizes, and produced more consistent chicks.
- Exposure of broilers with different growth potentials to cyclical heat stress revealed marked strain-specific differences in heat resilience. The slow-growing CARIDEBENDRA (CD) and medium-growing CARIBRODHANARAJA (CBD) birds maintained higher antioxidant capacity, stronger immune responses, and greater induction of heat-shock and antioxidant genes, resulting in greater resilience to heat stress compared to fast-growing VENCOBB430Y (COBB).

PROGRAMME-3: VALUE ADDITION, FOOD SAFETY, QUALITY ASSURANCE AND PRODUCT DEVELOPMENT

- A protein-enriched egg-based Chakli fortified with egg powder and Vitamin E was developed, containing 26.56% protein. The product remained safe for 90 days in aerobic packaging and 180 days under modified atmosphere packaging.
- Two innovative egg-based beverages (whole egg and egg-albumin based) were successfully standardised, with cocoa identified as the most acceptable flavour. Comprehensive analysis confirmed their nutritional quality and oxidative stability, while shelf-life studies determined 13–15 days of stability in glass packaging.

PROGRAMME-4: HRD, MARKET INTELLIGENCE AND TECHNOLOGY DISSEMINATION

- Under the DAPSC Scheme, 15 training-cum-awareness programmes and two Kukkut Melas were organised, benefiting 3,205 Scheduled Caste (SC) participants through capacity building in poultry, goat, and pig farming. Resources distributed to 1,325 beneficiaries from 72 villages included 14,489 CARI chicks, 17,725 kg poultry feed, 60 goats, 16 pigs, 110 sewing machines, 21 solar panels, and livelihood support kits. Fifteen self-help groups (SHGs) involving 152 members, mainly women, were formed to promote additional income-generating activities. Under the Chick Mother Unit (CMU), 12,561 chicks were reared and provided to SC beneficiaries, thereby strengthening sustainable livelihood opportunities.
- Under the DAPST programme, a total of 890 Scheduled Tribe (ST) beneficiaries from 14 villages were covered during 2025. A total of 13 training-cum-awareness programmes were conducted, focusing primarily on poultry production and goat farming. A total of 5,855 CARI germplasm (chicks), 7,650 kg compounded poultry feed, 35 goats, 271 kg mineral mixture, 271 bamboo huts, and other backyard poultry inputs were distributed to 306 beneficiaries from seven villages.
- The economic impact of CARINIRBHEEK and CARISHYAMA in the project area of the Development Action Plan for SC and ST Projects (Udham Singh Nagar district of Uttarakhand and Bareilly district of Uttar Pradesh), employing propensity score matching technique, indicated a positive and significant impact (~26 eggs per hen for weeks in lay; net returns of Rs. 387/bird; and total returns from meat of Rs. 63/bird).
- Under the NEH programme, two poultry farming workshops, one awareness camp, and four poultry husbandry health camps were conducted in Nagaland. A total of 1,750 CARI-improved germplasm birds and 5 tonnes of poultry feed were distributed to NEH beneficiaries. Additionally, a scientist–farmer interface meeting on poultry farming was organised.

Under the ABI Project, six new incubates were enrolled at the ideation stage, and five new technologies were added to the Institute's Technology Inventory. Two processing technologies and one feed formulation software (MAKEFEED POULTRY) were transferred and commercialised through formal technology licensing agreements with two industry partners.

The Institute filed two copyright and one design application, while one copyright was successfully registered. Additionally, 31 MoUs were signed for the supply of poultry germplasm.

Under Human Resource Development (HRD), a total of 51 training programmes were organised, comprising 50 national and 1 international event. These programmes collectively benefited 4,271 participants. Of the total, 43 programmes were conducted

in-house, while the remaining 8 were sponsored programmes.

Other Activities

- The Institute celebrated important national and institutional events, including the 76th Republic Day, the 79th Independence Day, the 156th Gandhi Jayanti, and the Institute's 46th Foundation Day.
- The Institute actively observed several important occasions, such as Swachhata awareness drives, Swachhata Pakhwara, World Egg Day, World Veterinary Day, International Yoga Day, Teachers' Day, World Environment Day, Vigilance Awareness Week, World IP Day, and Kisan Diwas.
- The Institute actively participated in the Viksit Krishi Sankalp Abhiyan in Pilibhit District, Uttar Pradesh, with the aim of educating farmers on diverse on-field challenges related to agriculture, livestock, and poultry farming.



Source CARI

2. Introduction

Having established on November 2, 1979, the ICAR-Central Avian Research Institute under the aegis of Indian Council of Agriculture Research, New Delhi has been the major driving force steering the Indian poultry sector through various phases of development during the past four decades. It has been providing much needed support in terms of elite germplasm, production and processing technologies, trained manpower through post graduate education, training and extension in all sub-disciplines of Poultry Science for promoting sustainable diversified poultry production at commercial, small scale rural and backyard poultry production in the Country. The premier Institute with its campus at Izatnagar, Bareilly, Uttar Pradesh is the only one of its kind wholly dedicated to poultry science research, education and extension in the Country.

Basic and applied research through multi-disciplinary approach on diversified poultry species is conducted at the Institute. The remarkable growth achieved in the Indian poultry sector has been due to several factors like initiation of pure line breeding in the country especially at Central Avian Research Institute, leading to availability of elite germplasm of ducks, Japanese quails, turkey, native fowls and commercial layer and broiler chicken and parallel development of other input sub-sectors like feed, hatchery and farm appliances, poultry biologicals, feed analysis and disease diagnostics, modern mechanized poultry and egg processing plants, vertical and horizontal integration in poultry farming, availability of soft credit, and above all, ever-increasing demand of poultry products, etc.

The Institute has been serving as the nerve centre for popularizing ducks, Japanese quails, native fowls, Guinea fowls and turkey and disseminating their germplasm in the nook and corner of the entire Country. The high performing improved germplasm has been in very high demand due to their high suitability for the concept of 'production by masses'. The pure lines of important breeds of diversified poultry species are being maintained at the Institute. The Institute has also been providing focused support to the industry by providing entrepreneurship development and business incubation facilities.

Mandate

- Basic and applied research on productivity enhancement for sustainable production in diverse avian species.
- Human resource development and capacity building.

Major R & D activities

The Institute is committed to the requirements of the small poultry entrepreneurs on one hand and is also responsive to the problems and challenges faced by the commercial poultry industry on the other hand. A wide range of challenges faced by the poultry industry are being addressed by the institute, some of which are outlined below:

- Genetic improvement, characterization and propagation of diversified poultry species through selective breeding and molecular techniques, research in frontier areas and conservation of native poultry species.
- Basic and applied aspects of poultry nutrition including alternate feed resources for reduction in cost of poultry production, diagnostics and consultancy services in feed analysis and quality assurance etc.
- Physiological interventions for improved reproduction, digestion and stress management.
- Development of value added and functional poultry products, innovative techniques for preservation, packaging and shelf life enhancement, processing and utilization of poultry by-products.
- Poultry waste utilization as source of green energy.
- Providing training, advisory and consultancy services including agribusiness incubation facilities and technology licensing.
- Development and dissemination of poultry production technologies through various extension methods, germplasm supply and publication of books/bulletins.

ORGANOGRAM

DIRECTOR

INSTITUTE MANAGEMENT COMMITTEE

RESEARCH ADVISORY COMMITTEE (RAC)

INSTITUTE RESEARCH COUNCIL (IRC)

ADMINISTRATION

SCIENTIFIC

AUXILIARY

DIVISIONS

- * Avian Genetics & Breeding
- * Avian Nutrition & Feed Technology
- * Avian Physiology & Reproduction Post-Harvest Technology

SECTIONS

- * Post-Graduate Education & Training
- * Avian Medicine
- * Poultry Housing & Management
- * Poultry Economics & Agribusiness Research
- * Prioritization, Monitoring & Evaluation
- * Technology Transfer

EXPERIMENTAL FARMS

- * Quail
- * Turkey
- * Guinea Fowl
- * Desi Fowl
- * Layer
- * Broiler
- * Emu
- * Demonstration Shed

SERVICE UNITS

- * Hatchery
- * Feed Storage & Processing Unit
- * Agriculture Knowledge Management Unit
- * Institute Technology Management Unit
- * Agribusiness Incubation Center
- * Library
- * Poultry Processing Unit

- * Bill and Cash
- * Establishment
- * General and Contract Audit and Accounts
- * Central Store
- * Telecommunication
- * Transport
- * Record
- * Hindi Cell

- * Vigilance Cell
- * Publication Cell
- * Engineering and Maintenance Unit
- * Security Section
- * Estate Section
- * Games and Sports Unit
- * Staff Welfare Club
- * Medical Unit
- * Marketing Centre
- * Germplasm Cell

3. Research Achievements

Programme-1: Productivity Enhancement of Selected Poultry Species

Sub Programme – (i) Enhancement of productivity, reproductive efficiency and immune-competence of selected diversified poultry species along with development of improved package of practices.

Genetic improvement of turkey for higher body weight (P-1/2020/1-IAV/L10/6600)

Selection in white variety of turkey (CARIVIRAT): The first generation of selection for higher 16-wk body weight was successfully completed in the White turkey variety (CARIVIRAT), while the CARICHITLA and CARIBLACK turkey varieties were maintained under a random breeding programme to preserve their genetic diversity. Growth performance of CARIVIRAT was recorded from hatch to 24 wks of age. The selected line exhibited superior body weight over the control line at all stages of growth, with body weights of 48.3 g vs. 0 g at hatch, 1071.9 g vs. 1009.3 g at 8 wks, 3065.6 g vs. 2826.1 g at 16 wks, and 4329.5 g vs. 4132.0 g at 24 wks.

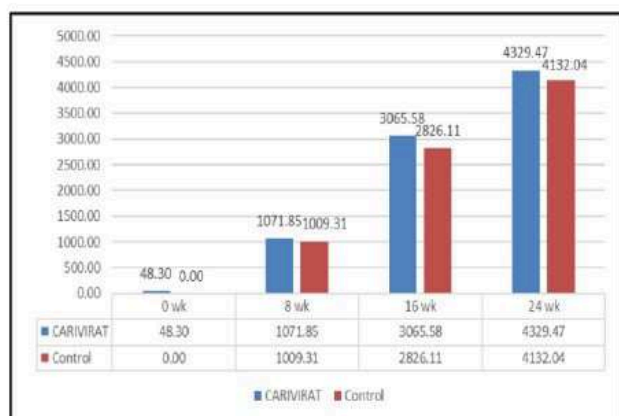


Figure: Recorded body weight of CARIVIRAT (White Turkey variety (CARIVIRAT) during 0-24 wks of age

Evaluation of egg-type varieties revealed that CARIBROWN attained sexual maturity earlier than CARISUNEHERI while maintaining comparable egg weight. CARIBROWN also produced more eggs up to 18 wks of age than CARISUNEHERI, and both

Table: Fertility and hatchability traits of turkey varieties

Variety	CARIVIRAT	CARIBLACK	CARICHITLA
Eggs set (Nos.)	6182	572	841
Percent fertility	66.05	84.97	70.27
Percent hatchability (FES)	57.53	57.20	54.82
Percent good poults	2349	278	324

Table: Hatchability performance of CARIVIRAT pedigreed population

Variety	CARIVIRAT	CONTROL
Eggs set (Nos.)	2556	447
Percent fertility	80.09	78.75
Percent hatchability (FES)	64.97	59.09
Percent good poults	80.09	208

Genetic improvement of three distinguished plumage and egg colour varieties of broiler and layer type domesticated Japanese Quails (P-1/2022/1-IAV/L10/6510)

The performance of improved Japanese quail varieties was evaluated under ideal incubation, brooding, and management conditions. Among the meat-type lines, CARIUTTAM recorded the highest hatchability (47.03%) and the lowest mortality (5.89%), indicating superior reproductive performance, whereas CARISUNEHERI exhibited comparatively lower hatchability and higher mortality than CARIBROWN. In the random mating populations, CARISWETA achieved the highest hatchability, followed by CARIPEARL and CARIUJAWAL with mortality ranging from 8.11% to 9.41%. improved lines substantially outperformed the control population in egg production and egg weight.

Table: The part time egg weight, egg production at 18th wks of age and ASM in Japanese quails among different genetic groups (n-300).

Variety	ASM (days)	EW18	EP18 (n)
CARIBROWN	43.67±0.06	12.89±0.08	42.37
CARISUNEHERI	49.57±0.23	12.94±0.07	38.67
CONTROL LINE	57.33±0.14	9.88±0.05	30.53

Growth performance assessment demonstrated that CARIUTTAM, CARIBROWN and CARISUNEHERI consistently achieved higher body weights in both males and females across all ages compared with the control population. Overall, the improved quail varieties exhibited superior reproductive efficiency, growth, and egg production traits, confirming the effectiveness of the breeding programme and their suitability for commercial meat and egg production.

Table: Mean ±SE of 5 wk body weight (g) of Japanese quails among different genetic groups

Variety	Sex	Body weight
CARIUTTAM	Male	212.81±0.95
	Female	228.77±0.98
CONTROL LINE	Male	162.37±0.74
	Female	180.53±0.83
CARIBROWN	Male	173.08±0.57
	Female	184.46±0.91
CARISUNEHERI	Male	174.86±0.74
	Female	184.37±0.68
CONTROL LINE	Male	148.67±0.70
	Female	161.57±0.63

Non-Antibiotic approaches to enhances the host immunity, gut health and growth performances (P-1/2023/1-IAV/L30/6000)

A 42-day feeding trial was conducted to evaluate fermented cauliflower leaves (FCL) with fumaric acid (FA) as a natural alternative to antibiotic growth promoters (AGPs) in broiler chickens. In a Completely Randomized Design, 240-day-old chicks were randomly allotted to six dietary treatments with five replicates of eight birds each: T1 (negative control), T2 (AGP control), T3 (FCL 5 g/kg + FA 1 g/kg), T4 (FCL 5 g/kg + FA 0.5 g/kg), T5 (FCL 2.5 g/kg + FA 1 g/kg), and T6 (FCL 2.5 g/kg + FA 0.5 g/kg). Birds were fed ICAR (2013)-based diets under uniform management. Growth performance, immune responses, gut microbiota, intestinal morphology and histopathology, serum biochemical indices, antimicrobial susceptibility, and the prevalence of ESBL resistance genes (*bla* TEM and *bla*CTX-M-1) in *Escherichia coli* were assessed.

Growth performance differed significantly among treatments by 42 days ($P < 0.01$), with FCL-supplemented groups showing higher body weight gain and improved feed efficiency. Antimicrobial susceptibility of *Escherichia coli* isolates was significantly enhanced by FCL+FA supplementation. At wk 6, T3 (29.20 mm) and T5 (28.80 mm) exhibited greater cefotaxime sensitivity than the negative control (11.80 mm), while ceftriaxone susceptibility was highest in T5 (31.60 mm). Ampicillin sensitivity improved markedly in T6 (25.40 mm) and T4 (23.00 mm). Amoxiclav susceptibility remained above the clinical sensitivity threshold in all supplemented groups, whereas resistance increased in both controls. Similarly, co-trimoxazole sensitivity was maintained in FCL+FA treatments but was completely lost in the AGP control by wk 6. Dietary supplementation significantly reduced the prevalence of ESBL resistance genes ($P < 0.01$). The detection of *bla*_{TEM} declined from 66.66% (T1) and 75.00% (T2) to 43.33% in T5, while *bla*_{CTX-M-1} decreased from 33.33–36.11% in the controls to 16.66% in T5. Overall, T5 (FCL 2.5 g/kg + FA 1 g/kg) and T4 (FCL 5 g/kg + FA 0.5 g/kg) were the most effective treatments in reducing antimicrobial resistance gene carriage. Fermented cauliflower leaves, particularly at 5 g/kg diet with appropriate fumaric acid supplementation, also improved gut health, intestinal microbial ecology, and meat antioxidant capacity. These findings indicate that FCL is a promising natural alternative to antibiotic growth promoters for

enhancing broiler performance while mitigating antimicrobial resistance.

Evaluation of CARI improved germplasm in NEH region and its popularization under the aegis of ICAR-NEH scheme (No.CAU/COVSc-JLK/ICAR-NEH-COMP/2023-24/1111)

Two workshops on poultry farming on Poultry Farming, one awareness camps, four health camps on Poultry husbandry were conducted at Nagaland. Wherein 1750 CARI-improved germplasm, 5 tons of poultry feed were distributed to the NEH beneficiaries. One Scientist-Farmer interface meeting on poultry farming with 300 extension materials were distributed.



Field Rearing of CARI Improved Poultry Germplasm in Nagaland under the NEH program

Quality assessment of feed stuffs and poultry feed (Service project)

Feed Testing and Quality Control

Under the service project Division has been entrusted with the responsibility of chemical analysis and quality control of various feed ingredients and compounded feeds received from the institute, industry, government agencies and farmers. A total of 196 (131 outside + 30 Institute feed unit + 16 CARI Lab/farm) feed samples of various feed ingredients and compounded feed/ concentrates were received in the Division which were examined for proximate principles, minerals, adulterants and toxicants etc.

A total revenue of INR Rs. 1,36,401/- has been generated through sale of feed (Rs. 1,32,901/-) and MAKEFEED software (Rs. 3,500/-) Consultancy services

- Provided low-cost feed formulae to about 150 poultry farmers and small feed industries from different states (Uttar Pradesh, Karnataka, West Bengal, Uttarakhand, Haryana, Bihar, Jharkhand, Chattishgarh and MP) and solving the problems of farmers from different states through personal contact and telephone call.

Monitoring of poultry diseases and implementation of bio-security measures including vaccination for achieving better survivability and productivity in CARI birds. (Service project)

Mortality patterns and diseases diagnosed in diversified poultry species

- The analysis of percent mortality across different poultry species, stages, breeds, and months revealed a considerable variation attributable to biotic and abiotic stressors, genetic background, and seasonal influences. Stage-wise evaluation indicated that the chick phase was consistently associated with the highest mortality across all species, with quail ($20.08 \pm 7.11\%$) and desi fowl ($18.66 \pm 6.13\%$) recording markedly higher losses compared to other groups, while broilers exhibited relatively lower chick mortality ($9.61 \pm 6.53\%$). A substantial decline in mortality was observed during the grower stage, particularly in quail ($1.09 \pm 0.62\%$), suggesting improved adaptability and survivability with age. In adult phases, mortality showed species-specific fluctuations, with higher morning mortality in turkey ($9.11 \pm 2.69\%$) and guinea fowl ($8.34 \pm 2.75\%$), while afternoon mortality was comparatively elevated in desi fowl ($6.78 \pm 0.77\%$), indicating possible diurnal stress effects, including environmental temperature variations.
- Breed-wise analysis further demonstrated notable genetic influence on mortality patterns. Among desi fowl, CARIRED ($9.87 \pm 4.30\%$) showed the highest mortality, whereas Ankaleshwar ($3.98 \pm 1.92\%$) exhibited greater resilience. In quail, CARIPEARL recorded exceptionally high mortality ($17.38 \pm 9.96\%$), contrasting with lower values in CARIUJJWAL ($6.77 \pm 2.53\%$). Layer breeds showed reduced mortality overall, with White Leghorn ($8.26 \pm 4.23\%$) being higher and CARISONALI ($2.75 \pm 1.25\%$) the lowest. Guinea fowl mortality ranged from $8.73 \pm 1.97\%$ in Pearl to $11.74 \pm 3.26\%$ in

Lavender, while in turkey, CARICHITLA birds showed the highest mortality ($13.34 \pm 5.07\%$) compared to White ($8.28 \pm 0.97\%$). Among broilers, SML ($1.73 \pm 0.39\%$) recorded the lowest mortality, indicating superior performance, whereas desi and CSFL lines showed relatively higher values ($\sim 5\%$).

- Monthly trends revealed pronounced seasonal variation in mortality across species. Elevated mortality peaks were observed in quail during February ($27.75 \pm 24.12\%$) and May ($17.06 \pm 10.23\%$), in layers during September ($21.19 \pm 5.72\%$), and in guinea fowl from September to December (approximately 15–19%). Turkeys exhibited severe mortality during October ($20.52 \pm 3.04\%$) and November ($28.09 \pm 6.51\%$), while broilers showed a sharp increase in December ($29.25 \pm 23.61\%$). Conversely, relatively lower mortality was observed during July and August for most species, except guinea fowl, indicating a comparatively stable period. The observed seasonal pattern suggests that winter months predispose birds, particularly turkey and broilers, to higher mortality possibly due to cold stress and respiratory diseases, whereas monsoon and post-monsoon periods increase susceptibility in layers and guinea fowl due to high humidity and associated disease challenges. Summer-associated spikes in quail mortality further indicate their sensitivity to heat stress.
- Overall, the findings clearly demonstrate that mortality in poultry is multifactorial, with the highest susceptibility occurring during the early life stage, substantial variation across breeds due to genetic factors, and strong seasonal influences affecting different species differently. The relatively lower mortality observed in improved broiler strains and certain layer breeds highlights the effectiveness of selective breeding and improved management practices. These results emphasize the need for targeted interventions focusing on chick management, breed selection, and season-specific health and environmental control strategies to minimize mortality and enhance poultry production efficiency.
- Viral diseases like vvNDV was detected in layer and native chicken breeds and in response, Genotype VII-based live ND vaccines have been introduced in layer, broiler and native chicken farms of CARI.
- Diseases such as Coccidiosis, mycotoxicosis, Colibacillosis, Ascariasis and Heat stroke, were diagnosed during the reporting year.

Table: Stage wise percent mortality pattern

Stage	Chick	Grower	AM	AF
DESI FOWL	18.66±6.13	5.75±1.25	1.49±0.35	6.78±0.77
QUAIL	20.08±7.11	1.09±0.62	4.59±0.45	4.63±0.69
LAYER	12.84±2.59	4.92±1.93	4.47±1.17	2.03±0.29
GUINEA FOWL	11.83±2.77	5.24±1.76	5.34±2.75	5.76±2.27
TURKEY	12.33±3.41	5.99±2.85	6.11±2.69	7.69±2.41
BROILER	9.61±6.53	5.97±1.06	3.68±0.55	2.42±0.30

*AM= Adult Male, AF= Adult Female

Table: Breed/Variety wise percent mortality pattern

Species	Breed	Percent Mortality	Species	Breed/Variety/Line	Percent Mortality
DESI FOWL	Aseel Peela	8.74±4.10	QUAIL	CARIUTTAM	9.30±2.09
	Aseel Kager	4.86±1.67		CARIBROWN	9.39±4.68
	CARIRED	9.87±4.30		CARISUNEHRI	9.95±5.35
	Kadaknath	5.08±1.48		CARIUJJWAL	6.77±2.53
	Ankaleshwar	3.98±1.92		CARISWETA	7.07±1.95
LAYER	WLH	8.26±4.23		CARIPEARL	17.38±9.96
	RIR	5.24±2.17	GUINEA FOWL	PEARL	8.73±1.97
	CD	6.83±2.12		LAVENDER	11.74±3.26
	CARISONALI	2.75±1.25		WHITE	9.69±3.24
	CSML	3.45±1.32		WHITE	8.28±0.97
BROILER	DESI	5.49±2.18	TURKEY	BLACK	9.11±3.09
	SDL	2.25±0.42		CHITLA	13.34±5.07
	SML	1.73±0.39			
	CSML	4.69±0.88			
	CSFL	5.41±1.37			

Table: Month wise percent mortality pattern

Month	Desi Fowl	Quail	Layer	Guinea Fowl	Turkey	Broiler
APRIL	5.64±2.21	5.74±2.43	5.79±2.62	4.06±3.14	4.16±2.09	4.99±1.93
MAY	8.47±4.06	17.06±10.23	3.97±2.07	2.75±1.98	3.44±1.35	3.78±2.30
JUNE	5.25±1.79	7.70±0.56	6.72±3.34	1.60±0.87	5.09±1.73	3.54±1.24
JULY	2.26±1.06	4.04±2.33	9.74±6.86	3.54±2.71	3.49±0.96	2.07±0.98
AUGUST	4.35±1.11	15.90±11.48	4.89±2.64	10.50±8.89	3.50±1.06	3.08±1.23
SEPTEMBER	7.87±3.70	3.26±1.89	21.19±5.72	19.46±5.35	15.56±2.83	4.50±2.25
OCTOBER	8.01±5.79	7.95±3.41	10.92±5.41	15.74±3.79	20.52±3.04	4.82±2.94
NOVEMBER	10.52±5.12	3.75±2.16	5.26±3.46	11.52±4.41	28.09±6.51	3.03±1.59
DECEMBER	29.95±23.39	8.38±3.54	2.73±0.64	19.06±3.79	14.58±5.53	29.25±23.61
JANUARY	7.34±3.58	12.43±5.96	2.73±0.95	19.42±2.98	1.97±1.58	3.59±0.63
FEBRUARY	8.20±3.36	3.69±2.20	2.03±0.73	3.92±2.24	2.71±2.46	3.26±1.10
MARCH	5.72±2.48	8.49±3.55	3.46±1.05	4.99±2.77	0.79±0.28	2.71±1.01



Source CARI

Biosecurity practices implemented in CARI Farms

- The incidence of diseases in different seasons and in different poultry species having varying production profiles, was monitored to ensure early detection of disease/infection. Disease presence was monitored based on sero-surveillance. Regular necropsy of deceased birds was carried out besides following histological approaches for disease diagnosis. Strategies were devised and implemented for effective health management including proper prophylactic measures.
- For effective deworming, all the birds were given multi-vitamins and anti-stress agents in drinking

water one day prior to deworming and the programme of deworming was implemented as per prescribed schedule for specific species. For deworming, Levamisole, Albendazole have been implemented for effective disease mitigation. Antibiotic footprints calculated is 0.017 g/bird/year. To prevent the infectious agents in the farms, biosecurity measures were strengthened in terms of regular disinfection in and around the sheds, traffic control, water and vehicle dips intervention.

- The vaccination data suggests that poultry species other than chicken received lesser vaccination doses as compared to chicken.

Table: Details of vaccination employed in diversified poultry germplasm

Species	MD	ND	IBD	POX	R2B	ND+IBD Killed	Total
Native Chicken	28500	45500	40000	18000	12000	500	144500
Layer Chicken	33500	35500	28000	11000	4000	0	112000
Broiler Chicken	15000	28000	6000	2000	5000	1000	57000
Guinea Fowl	0	30000	0	0	0	0	30000
Total	77000	139000	74000	1500	31000	1500	343500

MD: Marek's disease; ND: Newcastle disease; IBD: Infectious Bursal disease

Production of DOCs of diversified poultry germplasm (Service project)

- A total of 144,359 healthy chicks were successfully hatched. The average hatchability on fertile egg set basis (TFES) in layer, broiler, quail, guinea fowl, turkey and desi fowl was 73.21, 70.18, 43.79, 59.50, 42.61, 68.61 percent respectively during 2025 (Table)

Table: Details of vaccination employed in diversified poultry germplasm

Germplasm	Eggs set (Nos.)	Percent fertility	Percent hatchability (TES)	Percent hatchability (FES)	Good Chicks (Nos.)
LAYER	93095	58.87 (41.47-89.38)	43.10 (7.58-79.74)	73.21 (14.44-95.88)	40125
BROILER	40325	73.73 (51.23-91.43)	51.74 (16.24-90.00)	70.18 (22.12-98.44)	20865
QUAIL	39475	-	43.35 (31.54-51.80)	-	17114
GUINEA FOWL	44473	55.36 (43.31-81.51)	32.94 (4.31-71.83)	59.50 (9.37-88.12)	14649
TURKEY	15675	71.55 (49.82-84.18)	30.49 (6.43-65.89)	42.61 (10.15-81.53)	4779
DESI FOWL	96361	64.95 (40.17-80.42)	44.57 (22.61-63.15)	68.61 (41.75-88.46)	42945
Other	7311	68.38 (7.14-96.00)	53.10 (6.12-71.64)	77.66 (55.56-94.68)	3882
Total	336715	-	-	-	144359

Figure in parenthesis denotes minimum and maximum range.



Visit of QRT to Experimental Hatchery Unit

Sub Programme – (ii) Development of package of practices for rural poultry production system
Improving the broiler parent lines and to develop the meat type crosses for rural poultry production
(Component – AICRP-PB, Hyderabad)

Selection records

The CSML and CSFL lines have reached 22nd generation of selection based on 5th wk body weight. In CSML and CSFL, 34 sires and 160 dams were used under random breeding. In the control lines, 36 sires and 108 dams were used. At the 61st Random Sample Broiler Test (2025) conducted at CPPTC, Gurugram, Haryana, CARIBRODHANRAJA™ achieved an impressive 2nd rank, following VENCOBB-430, with a live body weight of 1.89 kg at 7 wks.

Table: Incubation records of coloured broilers with fertility and hatchability results

Generation	Eggs Set (Nos.)	Percent fertility	Good chicks (Nos.)	Percent hatchability	
				TES	FES
CSML					
S-21	4698	82.78	4028	71.81	86.75
S-22	4185	89.53	3484	83.93	93.73
CSFL					
S-21	4043	88.42	3097	77.71	87.89
S-22	5287	88.99	4208	80.99	91.01
CONTROL					
S-21	1110	92.79	789	71.98	77.57
S-22	1117	82.05	911	74.92	91.31

Table: Body weight at 5 wks of age in CSML, CSFL and control lines during last three generations

Generation	Lines		
	CSML	CSFL	Control
S-20 (S)	1257±6.56	1242±5.15	669.8±4.06
S-21 (R)	946.20±7.08	957.60±5.58	735.10±5.19
S-22 (R)	1054.72±6.44	1049.88±7.52	795.67±6.96

Programme 2: Climate Resilient Poultry Production System and Waste Management

Sub Programme – Impact assessment, adaptation evaluation and amelioration strategies to combat extremes of climate through genetic / molecular, nutritional, physiological, shelter management and evolving efficient technologies for utilization of poultry waste.

Development of stabilized coloured dual purpose improved chicken variety for rural poultry (P-1/2025/1-IAV/L50/6100)

A project was initiated to develop dual-type true- breeding native dual purpose chicken breeds with egg production near to or above 200 eggs per annum under backyard system along with capacity to transmit its traits

freely to the offspring without segregation of traits. Under this project self-stabilized cross of RIR (CL) and Aseel (AP) based chicken varieties with superior economic traits will be done. To enhance productivity of dual-purpose varieties & uplift the socio-economic status of the rural community.

The Production parameters of crosses of Aseel Peela (AP) and CARILALIMA (CL) during first and second generation were presented in following table.

Table: Production parameters of first and second generation of AP X CL crosses reciprocal cross

Parameters	G1 (AP×CL)	G1 (CL× AP-CL)	G2 (AP×CL)	G2 (CL× AP-CL)
Avg. ASM (days)	190.45±0.96	191.27±2.84	169.22±0.84	174.42±2.74
Avg days under egg production (ASM up to 40 wks)	87.34±0.96	100.39±2.84	110.78±0.84	105.58±2.74
Egg production (up to 40 wks)	68.14±1.19	71.85±2.97	92.80±1.46	86.45±3.33

G1: First generation; G2: Second generation

Table: Second-generation body conformation Traits of AP and CL crosses

Age	Shank Length	Keel Length	Breast Angle	N
40 wks	83.57±0.58	101.87±0.93	56.75±0.65	40



Body conformation traits



Eggshell colour of Aseel Peela × CARILALIMA

Effect of thermal conditioning of Japanese quail embryo on epigenetic changes induced postnatal thermo-tolerance (P-1/2023/1-IAV/L50/6510)

Under this experiment embryonic thermal conditioning (ETC) at 40 °C, 12-14 day of embryonic development was done in Japanese quails which (considered as F-0 for the next experiment). On the day of hatch and 6th wk the brain tissue was collected to study the epigenetic related gene expression was done.

Effect of ETC on DNA methylation related genes

At DOH, Relative gene expressions of DNMT1 and DNMT3A (DNA methylation related genes) were done, and it was found that both genes were significantly downregulated in ETC group compared with the control group. Similarly, at six wks of age the Relative gene expression of both the DNA methylation related genes DNMT1 and DNMT3A were found that both genes were significantly downregulated in ETC group compared with the control group.

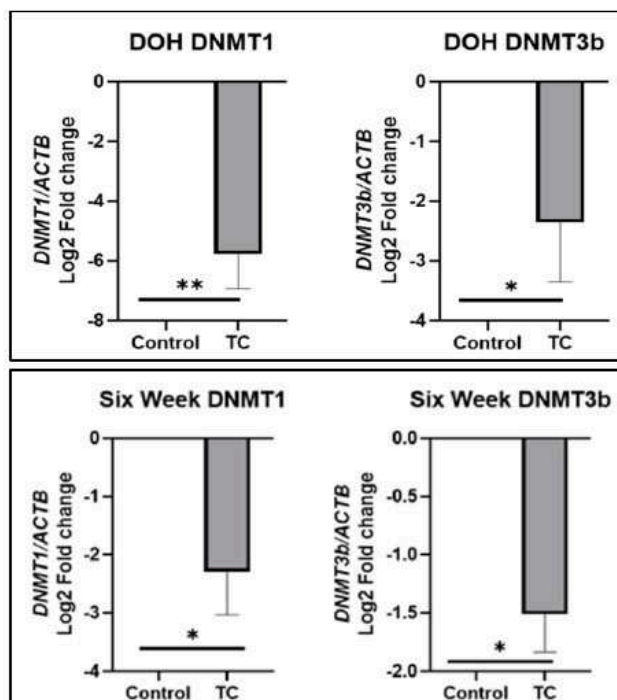


Figure: Relative gene expressions of DNMT1 and DNMT3A against actin beta (at day of hatch), and at six wks of age.

Effect of ETC on DNA de-methylation related genes

At DOH, Relative gene expression of MBD4 and GADD45a (DNA de-methylation related genes) was done and it was found that the MBD4 was gene were significantly up-regulated and for GADD45a no significant difference found in ETC group compared with the control group. Similarly, at six wks of age the Relative gene expression of MBD4 and GADD45a was done and it was found that the both genes were significantly up regulated in ETC group compared with the control group.

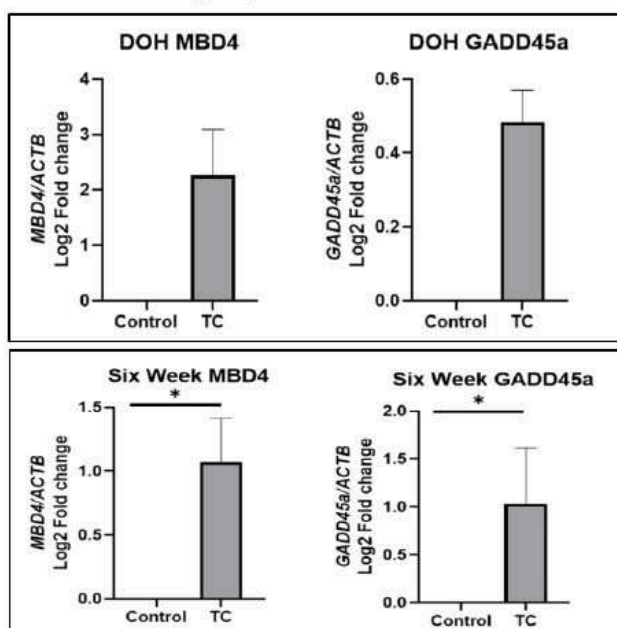


Figure: Relative gene expressions of MBD4 and GADD45a against actin beta (at day of hatch), and at six wks of age.

On sixth wk birds from the control group and embryonic thermal conditioned group were mated separately, eggs were collected and hatched without thermal conditioning: There was no significant difference found in hatch time and hatch window. Furthermore, the growth rate was similar in the treatment and control groups.

Effect of egg size and hatch synchronization on molecular and morphological development in Japanese quail (*Coturnix coturnix japonica*)

The present study investigated the effects of egg size (small, medium and large) and hatch synchronization on embryonic development, chick quality, and post-hatch performance in Japanese quail (*Coturnix coturnix japonica*). During embryonic development under non-synchronized incubation, the small-egg group exhibited significantly higher moisture loss at both embryonic development days (EDD) 9 and 15. At EDD9, small- and medium-sized eggs demonstrated significantly greater relative embryo weights, and by EDD15, the medium-egg group recorded the highest relative embryo weight ($61.90 \pm 1.29\%$). Throughout incubation, large eggs maintained a consistently higher yolk sac weight (EDD15: $25.49 \pm 0.82\%$). The percentage of yolk internalization at EDD15 followed a clear size-dependent trend: small ($72.50 \pm 1.44\%$) > medium ($61.25 \pm 1.25\%$) > large ($26.25 \pm 2.39\%$). At hatch, chicks from large eggs were heavier (9.02 ± 0.09 g) and longer (11.76 ± 0.09 cm), and they also retained the highest residual yolk sac weight (4.581 ± 0.381 g), intestinal histomorphology revealed higher villus height and villus-height-to-crypt-depth (VH:CD) ratios in large-egg chicks. Molecular analyses at EDD9 showed elevated intestinal and yolk sac expression of nutrient transporter genes (*PepT1*, *SGLT1*, and *EAAT3*) in small eggs. At hatch, hepatic *HSP70* expression was higher in the small-egg group. To address developmental asynchrony, a synchronization protocol was implemented wherein incubation was staggered by 12 hours according to egg size, ensuring that embryos from all groups reached comparable developmental stages. Under this synchronized regime relative embryo and relative yolk sac weight showed no significant difference among different egg size group at either EDD9 or EDD15, confirming effective harmonization of embryonic development. Notably, yolk internalization in large eggs improved markedly to $48.00 \pm 2.54\%$, compared to $26.25 \pm 2.39\%$ in the non-synchronized counterpart. Synchronization also narrowed the hatch window substantially, from 49

hours in the non-synchronized group to 26 hours, yielding more uniform chick sizes and improved overall hatchling quality with no variation in post-hatch quail chick biology



Figure. Image showing different sizes of egg.

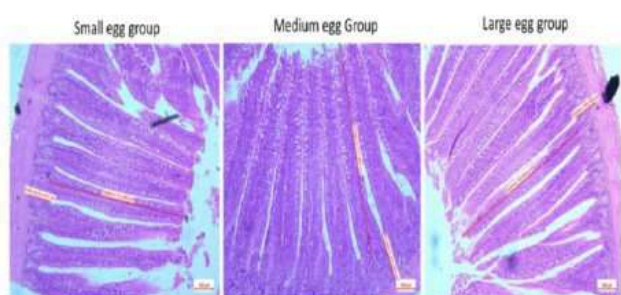


Figure. Representation of histo-morphology of jejunum of small, medium and large egg size group Japanese quails on 6th wk

Identification of physiological and molecular signatures responsible for thermal resilience in chickens of different genetic backgrounds under changing climate scenario (P-1/2024/1-IAV/L50/6100)

To evaluate heat resilience patterns in broilers with varying production potentials, three meat genotypes were selected: CARIDEBENDRA (slow-growing), CARIBRODHANARAJA (medium-growing), and VENCOBB430Y (fast-growing). The birds were reared under standard management conditions from day 0 to day 34, and subsequently exposed to cyclical short-term heat stress from day 35 to day 42. Heat stress exposure was conducted in a psychrometric chamber at a Temperature-Humidity Index (THI) >89 for 6 hours per day. Sampling and data collection were carried out on days 1, 3, 5, and 7, immediately following the exposure periods.

- Plasma lactate levels, plasma TAOC and muscle TBARS were significantly influenced by strain and duration of heat stress exposure ($p < 0.001$) with significant interaction. Across all heat stress days, fast-growing COBB (VENCOBB-430Y) birds exhibited significantly higher plasma lactate, muscle lipid peroxidation and poor TAOC

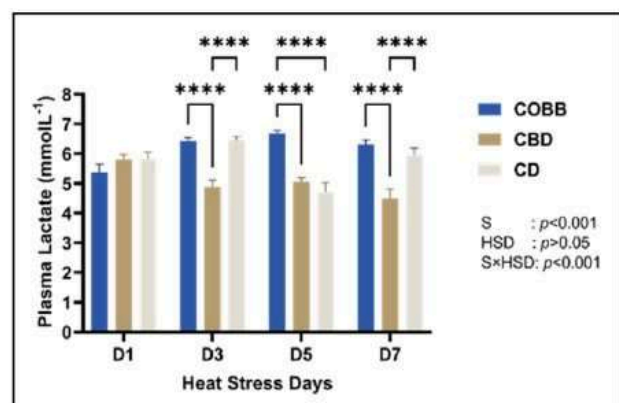
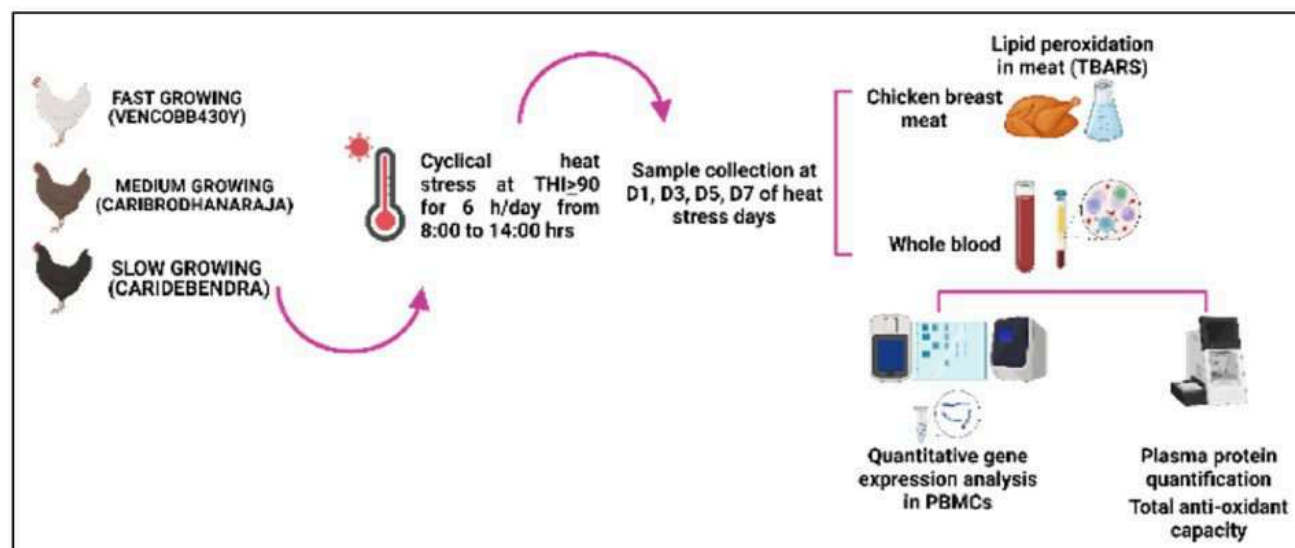
concentrations compared with medium-growing CBD (CARIBRODHANARAJA) and slow-growing CD (CARIDEBENDRA) chickens. These differences among strains remained significant throughout the heat stress period, as indicated by multiple comparison analysis. Heat stress duration resulted in a progressive increase in plasma lactate concentrations across all strains. Lactate levels increased significantly with advancing days of heat exposure, indicating an intensification of metabolic stress. The magnitude of lactate elevation was most pronounced in fast-growing birds, whereas slow-growing chickens demonstrated a comparatively attenuated response.

- Across strains, a clear linear pattern was evident, with fast-growing COBB birds exhibiting the lowest TAOC values ($6.46 \mu\text{mol L}^{-1}$), followed by medium-growing CBD and slow-growing CD chickens, which showed the highest antioxidant capacity ($9.14 \mu\text{mol L}^{-1}$). Regardless of strain, HSD significantly modulated TAOC with values declining sharply by D3, followed by partial recovery by D5 and a marked improvement by D7 indicating a possible adaptive adjustment to the prolonged thermal challenge. Slow-growing CD birds consistently maintained higher TAOC across all heat-stress days, whereas COBB birds showed the lowest values, particularly on D1 and D3.
- Heat-stress duration influenced TBARS such that levels peaked on D1 followed by subsequent decline by D5 and D7. The significant strain×HSD ($p = 0.002$) further highlighted that COBB birds were more susceptible to heat-induced oxidative damage, particularly during early exposure, while CD birds maintained minimal lipid peroxidation throughout the stress period. In the present study, a strong and significant correlation was observed between plasma and muscle antioxidant status ($r^2 = 0.95$; $p < 0.001$).

Strain exerted a significant effect on plasma IL-2 and IFN- γ concentrations ($p < 0.05$), whereas IL-10 levels were significantly affected ($p = 0.005$) by heat stress duration. The slow-growing strain (CD) exhibited significantly higher IL-2 concentrations compared with fast-growing COBB and medium-growing CBD birds ($p = 0.001$). Similarly, IFN- γ concentrations were significantly elevated in CD birds relative to COBB, with CBD showing intermediate values ($p = 0.026$). In contrast, plasma IL-10 concentrations did not differ

significantly among the three strains. Heat stress duration significantly influenced IL10 concentrations ($p=0.005$), while IL-2 and IFN- γ levels were not significantly affected ($p > 0.05$). Birds exposed to heat stress for 7 days (D7) exhibited significantly higher IL-10 concentrations compared with those exposed for

1, 3 or 5 days. IFN- γ concentrations remained comparable during entire heat exposure days. The interaction between strain and heat stress duration did not significantly influence plasma IL2, IL10 or IFN γ concentrations ($p > 0.05$).



Gene expression stability analysis was performed using four widely accepted algorithms ΔCt , BestKeeper, NormFinder, and GeNorm to identify the most reliable internal control for PBMC gene expression studies under heat stress. Among the five candidate housekeeping genes evaluated, variability in ranking was observed across algorithms, reflecting the differing statistical approaches adopted by each method. However, 18S rRNA consistently emerged as most stable gene, receiving top rankings in all four algorithms. This uniformity across independent methods indicates that the expression of 18S rRNA remained least affected by heat stress in PBMCs, making it the most appropriate reference gene for normalization in the present study. Among the evaluated markers, IFN γ , HSP70, and HSP90 differed significantly among strains

($p < 0.05$), whereas GPx, NOX4, NOX1, SOD, and CAT did not show a significant strain effect ($p > 0.05$). The fast-growing CBD and CD strains exhibited significantly higher IFN γ expression compared with COBB, with CD recording the highest mean value. Similarly, HSP70 expression was significantly elevated in CBD and CD strains relative to COBB. A comparable trend was observed for HSP90, although differences among strains were less pronounced and statistically non-significant. These results indicate a greater basal activation of immune- and stress-responsive pathways in medium- and slow-growing strains compared than fast-growing variant.

Heat stress duration exerted a highly significant influence ($p < 0.001$) on all evaluated markers. Compared with day 1 (D1), prolonged heat exposure (D3–D7) resulted in a marked elevation of GPx, IFN γ , HSP70, HSP90, NOX1, SOD, and CAT, indicating progressive activation of oxidative stress and antioxidant defense mechanisms. GPx expression increased sharply from D1 to D3 and remained elevated through D7. Similarly, HSP70 and HSP90 showed robust up-regulation from D3 onwards, reaching peak levels at D5 and D7. In contrast, NOX4 exhibited a fluctuating pattern, with a reduction at D3 and D5 followed by a significant increase at D7, suggesting time-dependent regulation of ROS generating enzymes under chronic heat exposure. Antioxidant enzymes SOD and CAT increased

significantly up to D5, while SOD showed a modest decline at D7, indicating possible exhaustion or adaptive re-regulation during prolonged stress. Interaction between strain and heat stress duration (S×HSD). A significant interaction ($p<0.001$) effect was observed for all markers, demonstrating strain-specific responses to increasing heat exposure (Table 3). At D1, oxidative and stress markers remained low across all strains. However, with prolonged heat stress, CBD and CD strains consistently exhibited higher expression of HSP70, HSP90, IFN, and antioxidant enzymes than COBB, particularly at D3, D5, and D7. Notably, CBD birds at D5 and D7 showed the highest HSP70 and CAT values, while CD birds displayed pronounced IFN and NOX1 expression at

D7, indicating differential coping strategies among strains. The COBB strain showed comparatively lower antioxidant and stress protein induction at later stages, suggesting a reduced adaptive capacity under chronic heat stress.

Figure. Plasma lactate levels of chicken strains exposed to varied heat stress regimen. **** indicates significant differences across the strains during days. S: Strain; HSD: Heat stress days; D: Days; COBB: VENCORB430Y (Fast growing white broiler chickens); CBD: CARIBRODHANARAJA (Medium growing coloured broiler chickens); CD: CARIDEBENDRA (Slow growing-coloured dual-purpose chickens).

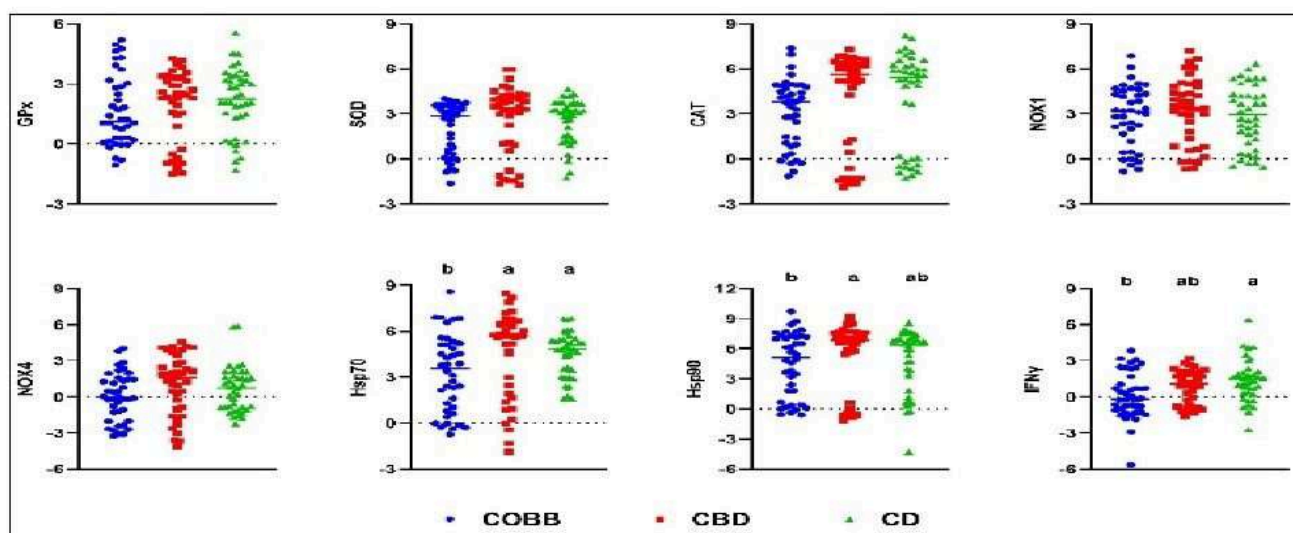


Figure: Scatter plots depicting the relative fold expression of oxidative stress biomarkers, heat shock factors and interferon genes of different meat type chickens exposed to HS (n=24). Plots indicating different superscripts differ significantly ($p<0.001$) across strains for respective gene data set. IFN γ : Interferon Gamma; NOX4: Nicotinamide adenine dinucleotide phosphate oxidase 4; NOX1: Nicotinamide adenine dinucleotide phosphate oxidase 1; Hsp70: Heat shock protein 70; Hsp90: Heat shock protein 90; HPRT1: Hypoxanthine Guanine Phosphoribosyl transferase; GPX1: Glutathione peroxidase 1; SOD: Superoxide dismutase; CAT: Catalase.

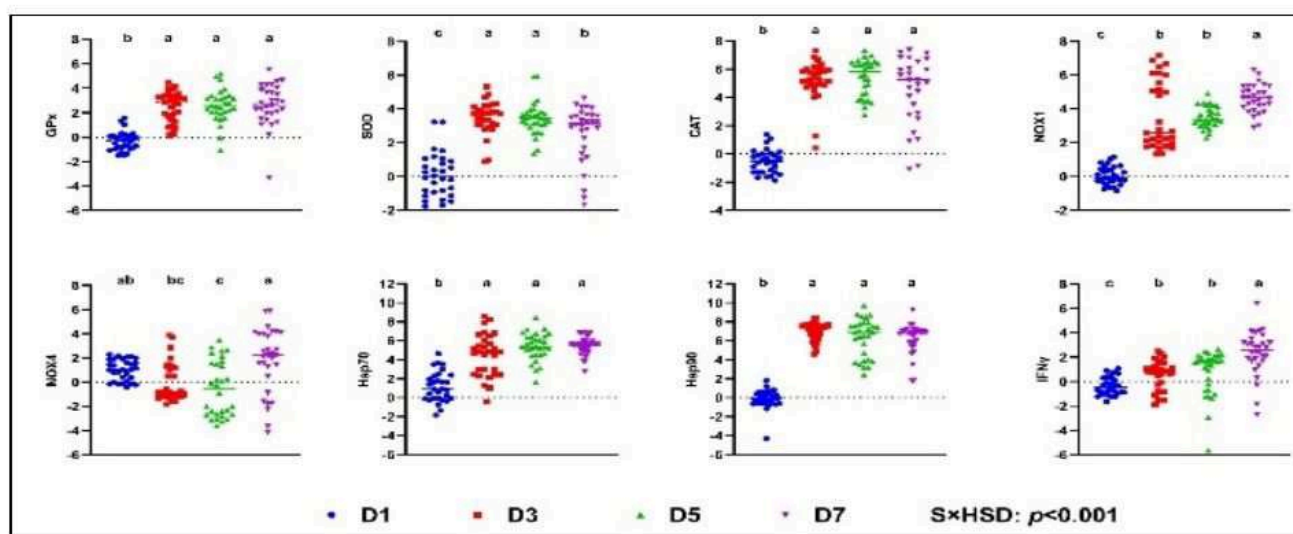


Figure: Scatter plots depicting the relative fold expression of oxidative stress biomarkers, heat shock factors and interferon genes of chickens exposed to varied heat stress days (n=18). Plots indicating different superscripts differ significantly ($p<0.001$) across heat stress days. The interactive effects of strain and heat stress days were significant ($p<0.001$) for all the studied genes.

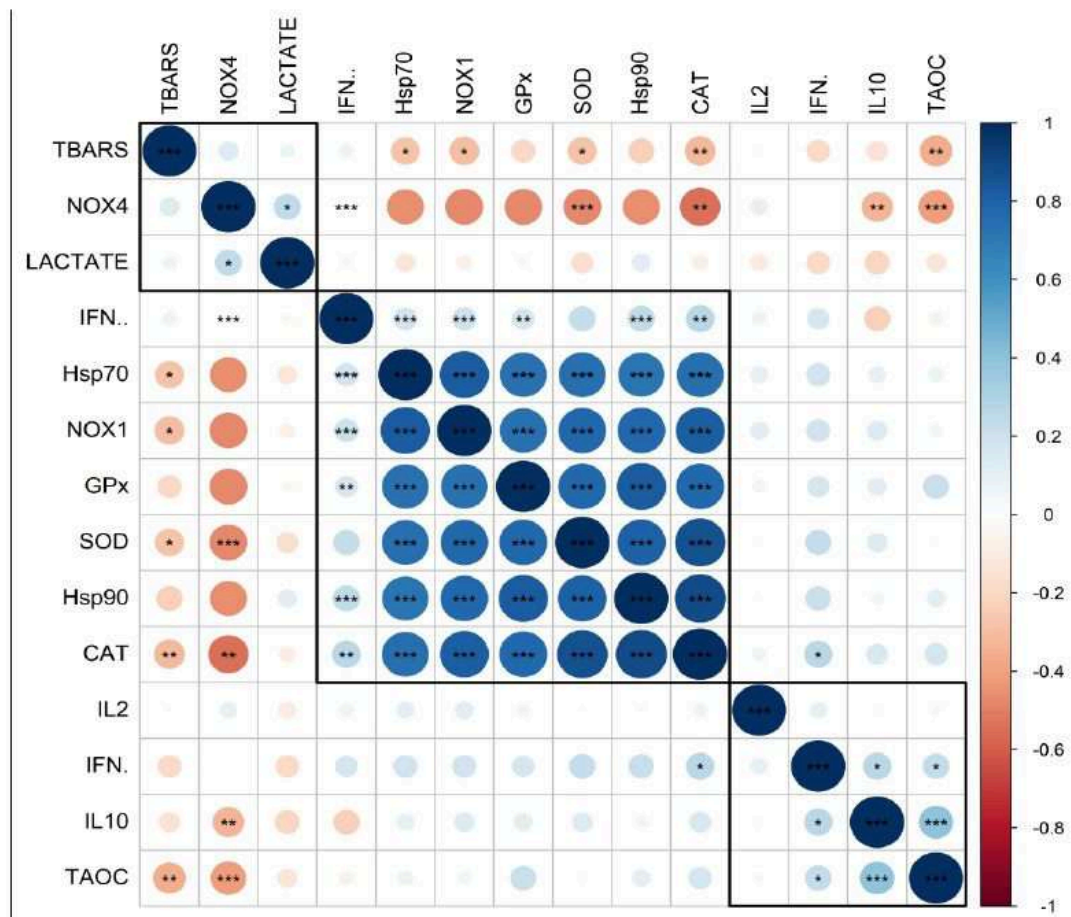


Figure: Pearson correlation matrix of antioxidant, heat-shock, and immune-related genes. The matrix is visualized based on hierarchical clustering of correlated genes. Blue and red colors indicate positive and negative correlations, respectively, with intensity proportional to the strength of correlation (r). The graph was constructed using the package "corrplot" of the R software version 4.0.3 (R Core Team, 2020). *Indicates significant correlation at $p < 0.05$ level. **indicates significant correlation at $p < 0.01$ level. * indicates significant correlation at $p < 0.001$ level.**

Pearson's correlation between the relative expression of oxidative stress biomarker genes, antioxidative status of meat, plasma lactate, anti-oxidative and cytokines levels was depicted in Figure. 5. Correlation analysis revealed clear co-regulation patterns among the studied biomarkers. The top left cluster indicated a positive correlation between lactate and NOX4. The antioxidant enzymes SOD, CAT, and GPx were strongly and significantly positively correlated with one another ($r > 0.70$, $***P < 0.001$), reflecting a tightly coordinated antioxidant response during heat exposure. While NOX1 showed positive correlation with HSPs and other antioxidant genes, NOX4 showed significant negative correlation with SOD and CAT (centre cluster). The bottom right cluster consisted of the immune cytokines IL-2, IFN- γ , and IL-10. IL-10 showed significant negative correlations with TBARS and NOX4, while exhibiting a positive correlation with TAOC. This indicates an anti-inflammatory and protective role. TAOC also showed a negative correlation with TBARS and NOX4 ($r \approx$

-0.40 to -0.60 , ** to $***P < 0.001$), emphasizing that a stronger systemic antioxidant capacity is associated with lower oxidative damage.

A heatmap with hierarchical clustering was generated to examine the time and strain-dependent patterns of antioxidant, heat-shock, and immune-related gene expression under varied heat exposure regimen. Distinct clustering patterns were observed based on Euclidian distances, segregating the samples into four major groups based on their transcriptional responses. Cluster 1 (vertically) was dominated by early exposure (D1), irrespective of the strains, showing a strong downregulation (blue colour) of almost all genes studied. Furthermore, cluster 4 was dominated by COBB during the later stages of exposure (D3, D5, and D7), during which the expression of Hsp70, Hsp90, and CAT were upregulated. However, clusters 2 and 3 also show upregulated expression of Hsp70, Hsp90, CAT genes and downregulation of IFN- γ and NOX-4 genes at all time points.

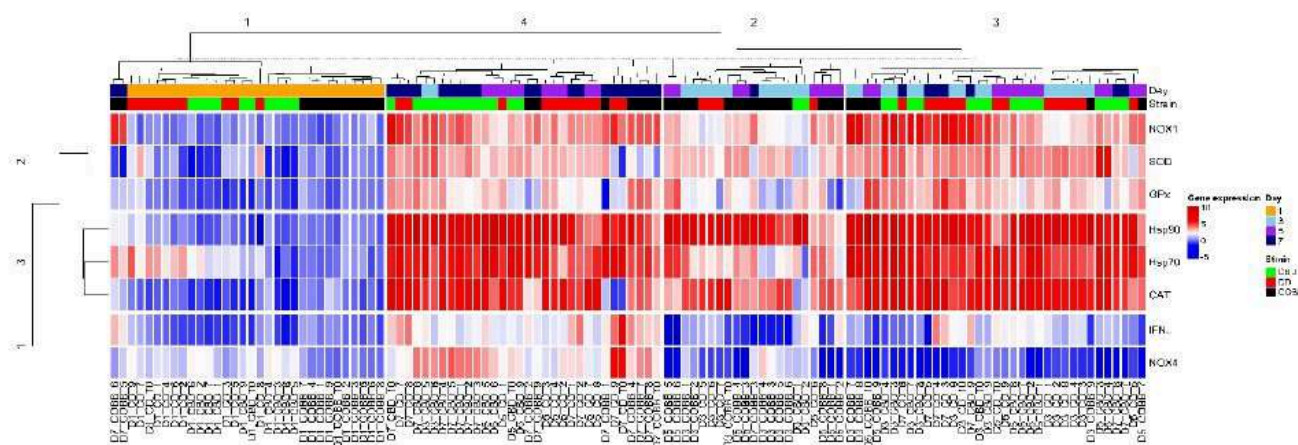


Figure: Heatmap showing the hierarchical clustering of gene expression profiles of antioxidant (NOX1, SOD, GPx, CAT), stress-response (Hsp70, Hsp90), and immune-related (IFN γ , NOX4) genes across broiler strains (CBD, CD, COBB) over 7 days of heat stress exposure. Columns represent individual samples, while rows represent genes. The colour scale indicates standardized expression values (red = upregulation; blue = downregulation). Dendrograms illustrate clustering of samples into four major clusters (1–4) and genes into 3 clusters based on similarity in expression patterns. All three chickens strains were reared in heat challenged environments for a period of 7 days. RT-qPCR was employed for gene expression analysis. Of several housekeeping genes studied, 18s RNA was selected as reference gene based on geometric mean ranking. The relative fold change log₂ (FC) of the gene expression was calculated as $2^{\Delta\Delta Ct}$. The graph was constructed using the “Complex Heatmap” package in R software version 4.0.3 (R Core Team, 2020).

(Medium growing coloured broiler chickens); CD: CARIDEBENDRA (Slow growing-coloured dual-purpose chickens). To gain insights into the biological dynamics of meat type chicken genotypes having varied production potentials, PCA was performed using antioxidant, heat-shock, and immune-related transcripts to predict data in bi-dimensional plots. The Eigen values have been generated for each parameter otherwise called principal component explaining the variance. Individuals were scattered on two dimensions, which explained 58.6% and 20.5% of the total variance, respectively. Clear differences were observed across heat stress days: samples from D1 formed a tight,

distinct cluster on the negative side of PC1, indicating a relatively uniform transcriptional response at the initial timepoint. In contrast, samples from D5 and D7 exhibited much wider dispersion, reflecting increased heterogeneity and stronger transcriptional divergence as heat exposure progressed. However, the strain-based differences (middle) were less pronounced. CBD and CD showed overlapping clusters, while the COBB was distinctly tending towards dimension 2. The variable graph (right) denoted that the Hsp70, NOX1, Hsp90, CAT, and SOD were the primary drivers along dimension 1. While, IFN- γ and NOX4 contributed to variation largely on dimension 2.

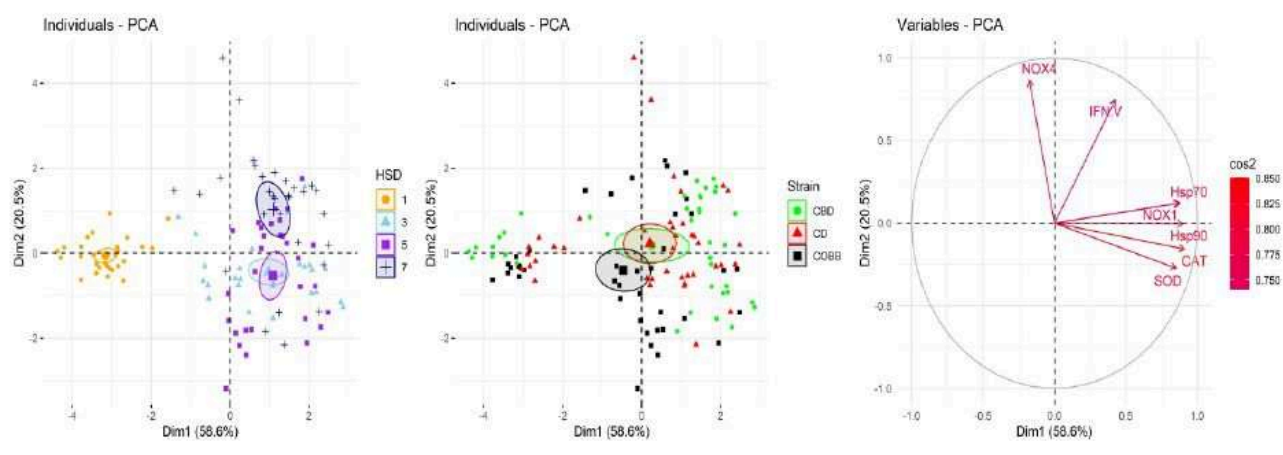


Figure : Principal component analysis (PCA) of antioxidant, heat-shock, and immune-related gene expression across heat stress days (HSD) and broiler strains. PCA of individuals coloured by heat stress duration (Left, HSD 1, 3, 5, and 7), strain (middle, CBD, CD, and COBB), and variable plot. This Figureure was constructed using “FactoMineR” package of the R software version 4.0.3 (R Core Team, 2020). Abbreviations: COBB: VENC0BB430Y (Fast growing white broiler chickens); CBD: CARIBRODHANARAJA (Medium growing coloured broiler chickens); CD: CARIDEBENDRA (Slow growing coloured dual-purpose chicken).

Programme 3: Value Addition, Food Safety, Quality Assurance and Product Development

Sub Programme – Development of value-added poultry feed and poultry products with functional attributes and quality assurance including product development

Development of different value-added poultry products for income generation (Service project)

a. CARI EGG CHAKALI

A protein-enriched egg-based traditional snack (Chakli) was successfully developed and standardized, achieving a high protein content ($26.56 \pm 1.11\%$ on dry matter basis) while maintaining its traditional sensory attributes. Physico-chemical parameters, including pH, free fatty acid (FFA), peroxide value (PV), and TBARS, showed a gradual and statistically significant ($p < 0.05$) change during storage, yet remained within acceptable limits under both aerobic and Modified Atmosphere Packaging (MAP), confirming controlled lipid oxidation and product stability. Microbiological quality was statistically validated, with standard plate counts remaining significantly ($P < 0.05$) below FSSAI permissible limits throughout storage. Pathogenic microorganisms (Coliforms, *E. coli*, *Staphylococcus aureus*, *Salmonella* spp., yeast and moulds) were not detected during the entire storage period under both packaging systems. Sensory evaluation, conducted using an 8-point hedonic scale, indicated that all sensory attributes (colour, flavour, crispiness, crunchiness, aftertaste, and overall acceptability) remained above the acceptable threshold, with no statistically significant ($P > 0.05$) decline in overall acceptability up to 90 days under aerobic packaging and 180 days under MAP at ambient temperature ($27 \pm 2^\circ\text{C}$). Statistical analysis of storage data clearly demonstrated the superior stability of MAP over aerobic packaging, with significantly lower ($P < 0.05$) increases in oxidative and microbial parameters, thereby establishing MAP as a more effective packaging system for protein-enriched chakli.



b. CARI EGG DRINK

The work was undertaken to investigate the potential of eggs as a value-added functional beverage ingredient in the Indian market. Despite egg protein possessing a superior biological value (100) when compared to whey and plant-based proteins, the Indian protein drink market remains predominantly dominated by whey-based products. Furthermore, while nearly 30% of eggs undergo processing in developed nations, India processes less than 5% of its egg production. This significant disparity highlights an untapped opportunity for value addition within the poultry sector. Accordingly, this study aimed to develop a nutritious, safe, and shelf-stable egg-based beverage to enhance protein accessibility while promoting diversification in egg utilization.

Two distinct beverage formulations were developed under the brand name "CARI Egg Drinks": a whole egg-based beverage and an egg albumen-based beverage. The formulations were systematically standardized through ingredient optimization, processing parameter refinement, and comprehensive sensory evaluation. Three flavour variants cocoa, thandai, and cardamom were assessed for consumer acceptability. Among these, the cocoa-flavoured whole egg drink (designated T1) and cocoa-flavoured egg albumen drink (designated T4) demonstrated the highest sensory acceptability and were consequently selected for further evaluation. Physicochemical and nutritional analysis revealed distinct characteristics between the two formulations. The whole egg beverage exhibited higher protein, fat, mineral content, and viscosity, attributable to the presence of yolk components. Conversely, the egg albumen-based beverage demonstrated superior oxidative stability and reduced sedimentation, owing to the absence of yolk lipids. Shelf-life studies were conducted under refrigerated storage conditions ($4 \pm 1^\circ\text{C}$) utilizing three packaging systems: glass bottles, plastic bottles, and flexible pouches. Throughout the storage period, key quality parameters were monitored, including pH, titratable acidity, viscosity, oxidative stability (measured as TBARS), microbial load, and sensory attributes. The results indicated that glass bottles provided superior preservation of product quality, effectively minimizing lipid oxidation, microbial proliferation, and sensory deterioration. The whole egg beverage exhibited a shelf life of approximately 13 days in glass packaging, while the egg albumen-based beverage remained stable for up to 15 days, attributable to the absence of oxidation-prone yolk lipids. Plastic bottles

demonstrated intermediate stability, whereas flexible pouches resulted in accelerated quality deterioration due to higher oxygen permeability. Microbiological analysis confirmed that all samples remained free from coliforms and Salmonella, validating the efficacy of pasteurization and hygienic processing practices. Sensory evaluation revealed that while whole egg beverages initially possessed richer flavour profiles, they deteriorated more rapidly during storage compared to albumin-based formulations. Overall, this study successfully developed innovative egg-based functional beverages (CARI Egg Drinks)

with substantial nutritional value and consumer acceptability.



Figure: CARI EGG DRINK

Table: Proximate and mineral analysis of formulated product

S. No.	Parameter Analyzed	Unit of Measurement	Results	
			Whole egg drink	Egg albumen drink
1	Moisture	g/100ml	78	84
2	Protein		10.36	8.40
3	Ash		0.87	0.77
4	Fat		6.38	0.73
5	Carbohydrate		4.40	6.09
6	Energy	kcal/100g	116.40	64.54

S. No.	Elements	Mass Number	Method of Analysis	Unit of Measurement	Results	
					Whole egg drink	Egg albumen drink
1.	Phosphorus	31	AOAC, 2011.14	mg/100ml	215.5	71.07
2.	Calcium	43			22.42	14.03
3.	Iron	57			2.98	1.43
4.	Manganese	55			0.414	0.339

Development of feeding package for CARINIRBHEEK and CARISHYAMA improved native chickens for optimum meat and eggs production (P-1/2023/1-IAV/L36/6100)

Effect of feeding variable dietary energy and protein levels on the performance of CARI DEBENDRA dual purpose chickens.

An experiment was conducted to evaluate the effect of feeding diets with varying energy and protein levels on the performance of CARIDEBENDRA dual-purpose chickens. A 15-wk feeding trial (0–15 wks) was carried out using three dietary energy levels (3000, 2800, and 2600 kcal/kg ME), each combined with three crude protein (CP) levels (22, 20, and 18%) in a 3 × 3 factorial design. A total of 360-day-old CARIDEBENDRA chicks were randomly distributed into 45 groups of eight chicks each, with five replicates per dietary treatment. Experimental diets were offered in mash form ad libitum from 0 to 15 wks of age, and the birds were

reared in battery brooder cages.

The results revealed that significantly higher body weight, body weight gain, improved feed efficiency, and better liability were observed in birds fed a diet containing 2800 kcal/kg ME with 22% CP, supplemented with 1.08% lysine, 0.40% methionine, and 0.86% threonine during 0–15 wks of age. Cellular and humoral immune responses were not significantly affected by dietary treatments, except for bursa weight, which was significantly higher in birds fed 3000 kcal/kg ME with 22% CP. Significantly higher crude protein and ether extract contents in meat were observed with higher dietary CP and ME levels, respectively. Similarly, higher ($p < 0.05$) water-holding capacity was recorded in birds fed 2800 kcal/kg ME diets, while lower shear force values were observed in birds receiving 18% CP diets. Serum triglyceride concentration at the 8th wk of age was significantly ($P < 0.05$) higher in birds fed 3000 kcal/kg

ME with 22% CP. Triglyceride levels decreased significantly with decreasing dietary energy concentration at both 8 and 15 wks of age. Serum total protein and uric acid concentrations decreased significantly with reduction in dietary crude protein levels from 22% to 18% at both 8 and 15 wks.

The overall feed cost per Kg live weight gain during 0–15 wks was lowest in birds fed the diet containing 2800 kcal/kg ME with 22% CP. Economic returns, calculated on both live weight and dressed weight bases, were numerically higher for birds fed the same

dietary combination. Based on the overall findings, it was concluded that a diet containing 2600 kcal/kg ME with 20% CP, 0.96% lysine, 0.38% methionine, and 0.80% threonine is adequate during the starter phase (0–4 wks). Thereafter, during the grower phase (5–15 wks), a diet containing 3000 kcal/kg ME with 18% CP, 0.83% lysine, 0.35% methionine, and 0.71% threonine was found sufficient to achieve optimum growth performance, immunity, carcass yield, meat quality and composition, serum biochemical profile, nutrient utilization, and economic returns in stall-fed CARI Debendra dual-purpose chickens.

Table: Effect of variable energy and protein levels on growth and immune response of CARIDEBENDRA

Treatments		BWG (gm) 0-15wks	FI (gm) 0-14wks	FCR 0-14wks	Foot web Index (mm)	HA titre (log2)
ME levels (Kcal/kg)	Protein levels (%)					
Interaction effect (ME × CP)						
3000	22	1792.27	5715.15	3.19	0.25	2.74
	20	1756.75	6021.81	3.35	0.25	2.61
	18	1831.39	5969.10	3.26	0.21	2.40
2800	22	2094.45	7081.29	3.39	0.27	2.81
	20	1957.57	6933.75	3.55	0.23	2.49
	18	1916.13	6906.81	3.59	0.27	2.59
2600	22	1900.52	7098.53	3.72	0.24	2.59
	20	1825.84	7001.67	3.83	0.23	2.68
	18	1826.49	7215.67	3.85	0.22	2.59
Pooled SEM		20.91	103.68	0.04	0.01	0.04
Main effect between ME levels						
3000		1793.47 ⁿ	5902.02 ⁿ	3.27 ^o	0.24	2.58
2800		1989.39 ^m	6973.95 ^m	3.51 ⁿ	0.26	2.63
2600		1850.95 ⁿ	7105.29 ^m	3.80 ^m	0.23	2.62
Main effect between CP levels						
22		1929.08	6589.26	3.44	0.26	2.71
20		1846.72	6702.35	3.58	0.24	2.59
18		1858.01	6697.19	3.57	0.23	2.53
Probabilities						
Interaction		NS	NS	NS	NS	NS
Between ME levels		(P< 0.01)	(P< 0.01)	(P< 0.01)	NS	NS
Between CP levels		NS	NS	NS	NS	NS

Response of feeding variable dietary energy and protein levels on production performance, egg quality traits and serum biochemical profile in CARINIRBHEEK laying hens

An experiment was undertaken to evaluate the effects of feeding different dietary energy and protein levels on production performance, egg quality traits, and serum biochemical parameters in CARINIRBHEEK laying hens. A 14-wk feeding trial (26–40 wks of age) was conducted using two levels of metabolizable energy (ME; 2700 and 2500 kcal/kg), each combined with three crude protein (CP) levels (17, 15, and 13%) in a 2 × 3 factorial design.

Each experimental diet was offered in mash form ad libitum to fifteen CARI Nirbheek laying hens housed individually in laying cages.

Among the egg quality traits, significantly (P < 0.05) higher egg weight was observed in hens fed the diet containing 2700 kcal/kg ME with 17% CP, followed by those fed 2500 kcal/kg ME with 17, 15, and 13% CP, compared to the other dietary combinations. Egg shape index was found to be significantly (P < 0.05) lower in hens fed the diet containing 2700 kcal/kg ME with 17% CP than in those receiving 2500 kcal/kg ME

with 17% CP. Albumen index was significantly ($P < 0.05$) lower in hens fed 2700 kcal/kg ME with 17% CP compared to the other dietary combinations. Haugh unit values were significantly ($P < 0.05$) higher in hens fed diets containing 15% CP than those fed 13% CP, while the values recorded for the 17% CP diet were intermediate. Serum total protein concentration was significantly ($P < 0.05$) higher in hens fed high-protein diets compared to those fed low-protein diets. Serum cholesterol concentration was significantly ($P < 0.05$) higher in hens fed the dietary combination of 2700 kcal/kg ME with 17% CP than in hens receiving the

other dietary treatments. Serum uric acid concentration was also significantly ($P < 0.05$) higher in hens fed high-CP diets than those fed low-CP diets. Significantly ($P < 0.01$) lower serum triglyceride concentration was observed in hens fed the diet containing 2700 kcal/kg ME with 13% CP.

The study recommends a diet containing 2500 kcal/kg ME, 13% CP, 0.74% lysine, 0.34% methionine, and 0.49% threonine for optimal production, egg quality, and metabolic health of CARINIRBHEEK laying hens during 26–40 wks of age.

Table: Production performance of CARINIRBHEEK hens fed with variable energy and protein levels

ME levels (kcal/kg)	Protein levels (%)	Egg production %	Feed intake (g/b)	FCR (per kg egg mass)	FCR (per dozen egg)	Net FCR	Net feed efficiency index	Body weight change (g)
Interaction effect-ME × CP								
2700	17	47.11	75.27	4.19	2.13	3.88	29.12	116.93
	15	47.76	75.46	3.69	2.06	3.51	31.13	103.73
	13	48.35	75.96	3.77	1.94	3.58	29.43	105.00
2500	17	55.59	80.60	3.39	1.90	3.24	34.48	132.40
	15	48.22	75.33	3.57	1.96	3.40	31.16	107.86
	13	52.03	73.86	3.17	1.73	3.09	32.90	64.66
SEM		1.31	0.681	0.125	0.059	0.114	0.887	9.45
Between energy levels								
2700		47.74	75.56	3.89	2.04	3.65	29.89	108.55
2500		51.95	76.60	3.38	1.86	3.25	32.85	101.64
Between protein levels								
	17	51.35	77.94	3.79	2.02	3.56	31.80	124.66
	15	47.99	75.40	3.63	2.01	3.45	31.15	105.80
	13	50.19	74.91	3.47	1.86	3.33	31.16	84.83
Probabilities								
Interaction		NS	NS	NS	NS	NS	NS	NS
ME levels		NS	NS	NS	NS	NS	NS	NS
Protein levels		NS	NS	NS	NS	NS	NS	NS

NS-Non significant

Effect of feeding different dietary energy and protein levels on production performance and egg quality traits in CARISHYAMA laying hens

An experiment was conducted to evaluate the effect of feeding different dietary energy and protein levels on egg production performance and egg quality traits in CARI Shyama laying hens. A 14-wk feeding trial (30–44 wks of age) was carried out using two levels of metabolizable energy (ME; 2700 and 2500 kcal/kg), each combined with three crude protein (CP) levels (17, 15, and 13%) in a 2 × 3 factorial design. Each experimental diet was offered in mash form *ad libitum* to fifteen CARISHYAMA laying hens housed individually in laying cages.

Egg quality parameters such as egg weight, egg shape index, albumen index, yolk index, yolk percentage, albumen percentage, yolk-to-albumen ratio, eggshell percentage, eggshell thickness, and Haugh unit were not significantly affected by either the main effects or the interaction between dietary energy and protein levels in the diets. Based on the overall findings, it was concluded that a dietary concentration Supplementation of diets containing 2500 kcal/kg ME with 13% CP, 0.74% lysine, 0.34% methionine, and 0.49% threonine, was adequate to achieve optimum egg production performance in CARISHYAMA laying hens during 30–44 wks of age

Table: Production performance of CARISHYAMA hens fed with variable energy and protein levels

ME levels (kcal/kg)	Protein levels (%)	Egg production %	Feed intake (g/b)	FCR (per kg egg mass)	FCR (per dozen egg)	Net FCR	Net feed efficiency index	Body weight change (g)
Interaction effect-ME × CP								
2700	17	52.61	96.17	4.16	2.32	3.79	27.70	240.80
	15	56.05	95.17	3.70	2.05	3.52	28.64	156.00
	13	56.38	95.58	3.88	2.06	3.72	27.47	138.80
2500	17	56.83	95.60	3.74	2.10	3.57	29.38	144.93
	15	55.50	94.51	4.02	2.08	3.82	27.23	147.20
	13	56.88	96.15	3.76	2.06	3.54	28.74	175.46
SEM		0.88	0.25	0.87	0.04	0.07	0.50	14.24
Between energy levels								
2700		55.01	95.64	3.91	2.14	3.67	27.94	178.53
2500		56.40	95.42	3.84	2.08	3.64	28.45	155.86
Between protein levels								
	17	54.72	95.88	3.95	2.21	3.68	28.54	192.86
	15	55.77	94.84	3.86	2.06	3.67	27.93	151.60
	13	56.63	95.87	3.82	2.06	3.63	28.10	157.13
Probabilities								
Interaction		NS	NS	NS	NS	NS	NS	NS
ME levels		NS	NS	NS	NS	NS	NS	NS
Protein levels		NS	NS	NS	NS	NS	NS	NS

NS-Non significant

Programme 4: HRD, Market Intelligence and Technology Dissemination

Sub Programme – (i) Market intelligence, contingency planning and economic implications of emerging issues in poultry value chain

Development of training modules and digital applications for transfer of poultry production technologies P-1/2022/1-IAV/ C00 /6000

Besides online and hybrid training modules, a recorded lecture module was developed and evaluated for technology transfer in poultry farming. The module on Turkey and Guinea fowl farming resulted in 58.94% and 59.07% knowledge gain, respectively. The mean knowledge scores increased from 1.05 to 6.92 for Turkey and 0.60 to 6.50 for Guinea fowl. Before training, all trainees belonged to the low knowledge category; following the recorded lectures, their knowledge levels shifted predominantly to the high category, demonstrating the effectiveness of the module.

The effectiveness of the hybrid training module on poultry production management was also assessed. In the offline mode, trainees ranked enhancement of poultry farming knowledge and skills as the most effective outcome (Rank I), followed by addressing poultry farming issues (Rank II), interaction with resource persons (Rank III), and business

management skills (Rank IV). In the online mode, enhancement of poultry farming knowledge and skills ranked first (Rank I), followed by business management skills (Rank II), addressing poultry farming issues (Rank III), and interaction with resource persons (Rank IV).

The major constraints perceived by offline trainees were long travel distances and poor transportation facilities (Rank I), disturbances created by online trainees (Rank II), high expenses for attending offline sessions (Rank III), inadequate facilities for hands-on sessions (Rank IV), less attention compared to online participants (Rank V), communication difficulties due to low literacy or multiple languages (Rank VI), and difficulty in reading or copying training content from presentations (Rank VII). Online trainees identified the high cost of digital devices (Rank I), internet data charges (Rank II), poor internet connectivity and power failures (Rank III), difficulties in completing online formalities (Rank IV), limited knowledge of online platforms (Rank V), lack of practical exposure and fear of using online technology (Rank VI), distracting home environments (Rank VII), difficulty in reading or copying content (Rank VIII), lack of local-language content (Rank IX), and comparatively less attention than offline participants (Rank X) as the major constraints.

Innovative strategies to reduce post-harvest losses to achieve better welfare of chicken

P-1/2023/1-IAV/L00/6100

Effect of phytobiotic-based spray on 30 days cold storage eggs.

A study was conducted to evaluate the efficacy of a phytobiotic-based spray, CARIEGG SHIELD, in preserving the quality and extending the shelf life of table eggs during storage. A total of 1,200 fresh eggs were divided into treated (sprayed) and untreated groups, stored at 10–15°C for 30 days, and subsequently assigned to four treatments: T1 (non-sprayed, continued refrigeration), T2 (non-sprayed, shifted to ambient temperature at 26.5±3°C), T3 (sprayed, continued refrigeration), and T4 (sprayed, shifted to ambient temperature). Over a 60-day evaluation period, eggs stored under refrigeration, particularly those treated with the herbal spray (T3), demonstrated significantly lower weight loss, minimal enlargement of the air cell, and better maintenance of specific gravity. Internal quality indicators such as Haugh Unit, albumen index, and yolk index declined more slowly in treated refrigerated eggs, while untreated eggs at ambient temperature (T2) showed rapid deterioration, including increased yolk weight percentage due to water migration from the albumen. pH values rose more sharply in untreated and ambient-stored eggs, indicating accelerated protein degradation and carbon dioxide loss. Microbiological analysis revealed that Total Plate Count and *Escherichia coli* counts increased significantly after day 36, with the lowest microbial load observed in T3 and the highest in T2. The herbal spray effectively inhibited microbial proliferation, especially under refrigeration. Overall, the combination of CARIEGGSHIELD application with cold storage (10–15°C) significantly preserved internal and external egg quality, reduced microbial spoilage, and extended shelf life. Specifically, treated eggs stored continuously under refrigeration remained safe for up to 66 days, compared to 54 days for untreated refrigerated eggs. Under ambient conditions following initial cold storage, sprayed eggs-maintained safety for 42 days versus 36 days for unsprayed eggs.

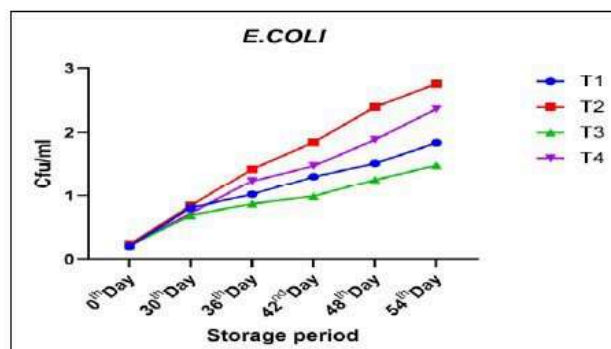
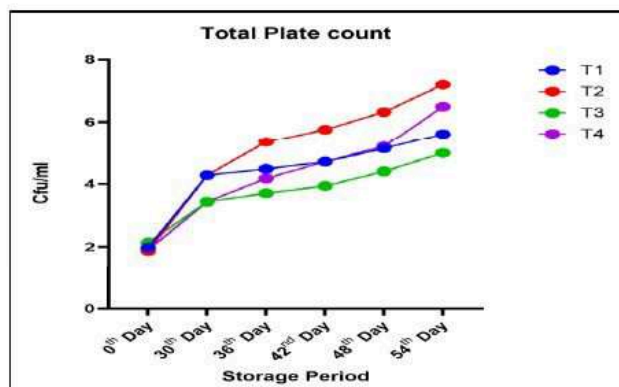


Figure. - Microbial Parameters evaluation of CARI Egg Drinks

Antistressor liposomes formulation and characterization

Five different liposome formulations were prepared and evaluated, with formulation F3 showing the most favorable results for loading efficiency and selected as the optimal formulation. The pH values of the liposomes ranged from 3.14 to 3.98, indicating an acidic environment that supports gut health in broiler birds by promoting digestion and suppressing harmful bacteria. FTIR analysis revealed characteristic absorption peaks in F1, F3, and F5, particularly indicating antioxidant presence and functional stability in F3. Zeta size and zeta potential measurements showed uniform particle sizes and stable electrokinetic profiles across all samples, with F3 demonstrating a notably strong zeta potential of -27.7 mV, which supports enhanced stability. SEM analysis confirmed the uniformity and size consistency of particles, with F3 showing the smallest and most compact particles, ranging from 195.1 nm to 363.8 nm, which is ideal for bioavailability and effective nutrient delivery. From these results, formulation F3 exhibited optimal physical and chemical properties, including uniform particle size, strong electrokinetic stability, and acidic pH, all of which are beneficial for the gut health and performance of broilers. Based on following important results F3 was finalized to supplement to the birds in drinking water at 72hrs before transportation-

- ✓ F3 formulation reported the highest loading percentage among all formulations.
- ✓ The SEM size of F3 formulation ranged from 100-350 nm.
- ✓ The size range of F3 formulation was comparable with all liposomes.
- ✓ F3 formulation was chosen based on the highest loading percentage of the principal component and its overall superior characteristics.

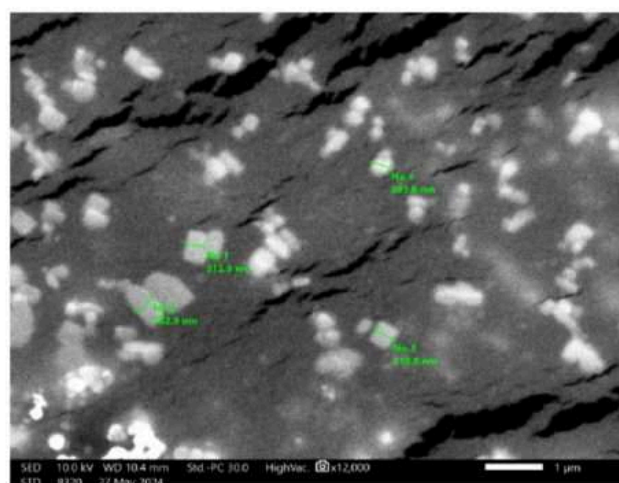
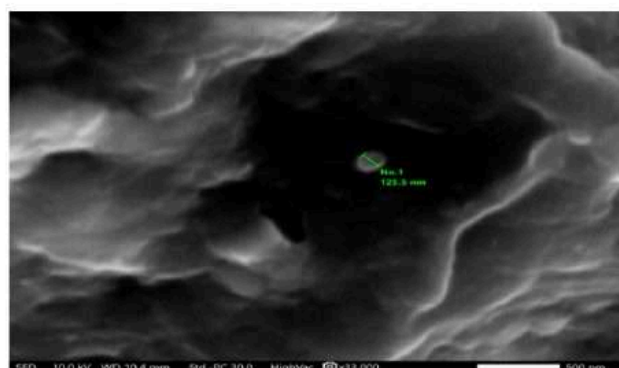
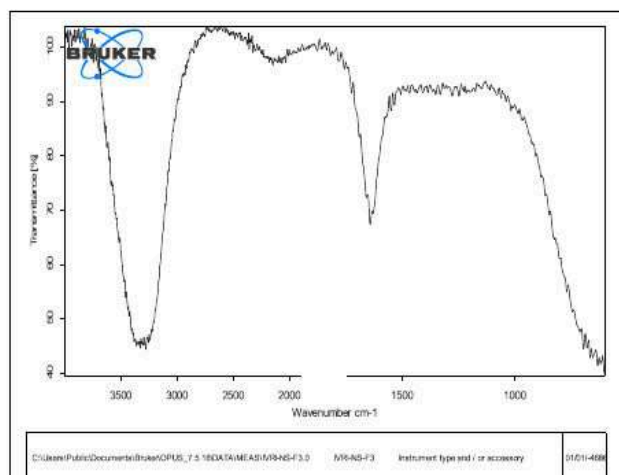


Figure: FTIR (Fourier Transform infrared spectroscopy) & Scanning Electron Microscopy (SEM) results of selected liposome formulation i.e. F3

Evaluation of selected liposome formulation for amelioration of post-harvest losses in broilers

A total of 200 COBB broiler chickens of having weight 1.5 to 1.7 kg were divided into five treatment groups with each group consisting of forty birds. Birds were reared under standard farm conditions T1 kept as control and transported for the 8 hours, in the T2, T3, T4 treatment group bird supplemented with different levels (25ml/lit, 18.75ml/lit, 12.5ml/lit) of liposome dose respectively through drinking water. The T5 group was supplemented by CARI- COMFORT at 4.2 gm/ lit of drinking water. Liposomes and CARI-Comfort supplementation was carried out 72hr prior to transportation, i.e. on 33, 34, and 35th day in drinking water. Transportation-induced body weight loss was significantly ($P<0.001$) mitigated in the treatment groups compared to the control (T1), which showed the highest weight reduction (138.73 ± 5.71 g and 8.48%). Mortality rates were also reduced in treated groups, with no mortality observed in T2, T3, and T4, and a slight decrease to 0.5% in T5. The T2 group showed significantly ($P<0.001$) superior intestinal morphology as well as welfare outcomes during transport stress with shortest tonic immobility and run-away times, fewer physical injuries, and lower body temperatures, reflecting improved stress resilience. Additionally, fecal scores indicated healthier gut conditions, with T2 displaying solid to semi-solid fecal consistency. These results conclude that the liposome based anti-stressor package effectively enhances welfare parameters, minimizing transport-induced stress and supporting broiler health. The T2 treatment (25 mL/L) yielded the highest cost savings of approximately 3.72 rupees per kilogram, followed by T3 and T4.

Table- Effect of liposome supplementation on the body weight of transported broiler birds

Treatment	Body Weight Before Transport	Body Weight After Transport	Difference in weight	Difference in weight (%)	Mortality
T1 (Control)	1632.67 $\pm$ 30.52	1493.93 $\pm$ 28.61	138.73 $\pm$ 5.71 ^a	8.48 $\pm$ 0.31 ^a	1%
T2 (25 mL/Lit)	1673.87 $\pm$ 36.47	1585.81 $\pm$ 32.62	88.07 $\pm$ 9.36 ^b	5.22 $\pm$ 0.51 ^c	-
T3 (18.75 mL/Lit)	1700.21 $\pm$ 34.67	1592.93 $\pm$ 35.62	107.27 $\pm$ 9.67 ^{ab}	6.34 $\pm$ 0.59 ^b	-
T4 (12.5 mL/Lit)	1616.12 $\pm$ 27.68	1505.61 $\pm$ 25.62	110.41 $\pm$ 10.96 ^{ab}	6.79 $\pm$ 0.64 ^{ab}	-
T5 4.2 ma/Lit (CARICOMFORT)	1711.87 $\pm$ 25.31	1592.12 $\pm$ 22.35	119.87 $\pm$ 8.02 ^{ab}	6.97 $\pm$ 0.42 ^{ab}	0.5%

Assessing economic impact of selected CARI technologies and services (P-1/2024/1-IAV/E10/6000)

To assess the economic impact of improved poultry varieties CARINIRBHEEK and CARISHYAMA under Development Action Plan for SC and ST Projects at ICAR-CARI propensity score matching technique was used which is a statistical technique used in observational studies to reduce selection bias by equating groups based on pre-treatment characteristics. It calculates the probability (propensity score) of a unit receiving treatment based on covariates, then matches treated subjects with untreated subjects having similar scores to estimate causal or treatment effects. The study area comprised of Udham Singh Nagar district of Uttarakhand and Bareilly district of Uttar Pradesh. Primary survey was conducted in the project area and data were collected from 120 beneficiaries (treatment) and an equal no. from non-beneficiaries (control) through a structure interview schedule. The data period was referenced to one production cycle in 2024. The control and treatment groups were matched using p-scores. The observations with off support (dissimilar propensity scores) vis-à-vis treatment group were dropped. Thus, 98 observations in control group were matched with 120 observations in treatment group across various blocks of p-score as shown in the following table.

The study concluded that the treatment effect on the treated was positive and significant indicating positive impact of improved native poultry germplasm in the study area. The treatment effect could have been even more, had the birds were reared by the beneficiaries for the full productive term instead of an average of merely 38 wks after which the birds were disposed of or consumed.

Table: Propensity-scores matching for the control and treatment groups

Blocks of p-score	Control group (no.)	Treatment group (no.)	Total (no.)
0.2 - 0.4	37	17	54
0.4 - 0.6	36	47	83
0.6 - 0.8	21	48	69
0.8 - 1.0	4	8	12
Total	98*	120	218

Having matched the p-scores using capiler method with caliper width being 0.05 x SD of the logit of propensity score, the average treatment effects on the treated for various performance variables were estimated as follows.

Table: Estimation of Average Treatment Effect on the Treated (ATT)

Variables	Matching method	ATT	t-value
Eggs per hen for wks in lay (no.)	Caliper (0.05)	25.51***	7.91
Net returns / bird (Rs.)	Caliper (0.05)	387***	9.27
Total returns from meat per bird (Rs.)	Caliper (0.05)	63***	2.88

*** Significant at 1%

Socio-economic empowerment of tribal through intervention of poultry and other technologies (P-1/2024/1-IAV/E00/6000)

Villages and beneficiaries covered

A total of 890 beneficiaries belonging to ST were covered under this scheme in 2025 from 16 villages (Bhudai tigari, Kutara, tedaghat, Pachpeda Bhatta, Vichpuri, Khairana, Pachpeda, Nadanna, Sonai Balai, Dhora Ghusri, Siddha Navadiya, Khempur, Balkheda, Yechta, Fatehganj West, Gopalpur, Sainjani)

Training and awareness programs

A total of 13 training cum awareness programs were organized, covering: Poultry production (12 programs) Goat farming (1 program)

Distribution of resources

The following resources were provided to beneficiaries (306 (F 215+M 91) from 7 different villages). Poultry: 5855 chicks of CARI germplasm (CARINIRBHEEK/CARISHYAMA), 35 goats, 7650 kg of compounded poultry feed, Mineral mixture- 271 kg, Bamboo Hut- 271 and other related item on backyard poultry framing.





Entrepreneurship opportunities and skill development for self-sustainable livelihood and nutritional security of socially privileged groups (P-1/2024/1-IAV/E30/6000)

Villages and beneficiaries covered

A total of 3205 beneficiaries belonging to SC were covered under this scheme in 2025 from 85 villages (Rehpurajagir, Tilmas, NugmaThakuran, Bakeniya, Hardoi Mohammad ganj Mustkil, Khaikheda Mohrniya, Budholi Sagalpur, Dandianagla, Magrasa, Dheerpur, Tajpura, Bahrole, Khaikhera, Guntiyasongh, Pindarai Abhychand, Khate, Dumkhoda ,Kareli, Gulariya UpralaGaurei Shankar Mahadev, Chanhetai, Bahroli, KakraKhurd, Nabdiyasinghyai, Arjunpur, Daruapur, Patراسيا, Aliganj, Bhamora, Ujhani, Dhoira Mafee, Rampura Kanjiya, Hajiypur, Katra Chand khaa, Bisartganj, Bahmora, Sahasa, KatkaRam, anSinga, Pipariya Muskit, Dhiya, Veerpurmakrua, Bherpura Bherpura, Khujuriya, Khanpurdhiya, Rampurakanjiya, Sagalpur, Bans Bojh, Husennagla, Chodera, Gidoli, Bhoola Bhoolayiya, Mundia Ahamad Nagar, Devchara, Jaitpur, Vijay Nagla, Biharipur, Ambedkar Nagar, Katra, Chand Khann, Sattar Nagar, Majhua Ganga Pur, Pipra Nankar ,Bhuiyapur, Nirandapur, Majhua Gangapur, Bhiynapur, Dhaiya, Najhuagangapur, Jatavpura, Mugalpur, Atakaysthan, JabedaJabedi, Surkha, Ituasukhdevpur, Sundiyaba, Pchumi, Dandianagla, Ladpur, chotivihar, Govindpur, Kanmja Dasapur, Subhas Nagar ,Tulasherpur, Cawad, Muidiya, Bareilly cant, Fatehganj West, Gopalpur, Sainjani)

Training and awareness programs

A total of 15 training (1 off campus and 14 on campus cum awareness programs were organized engaging 3205 participants, covering: Poultry production (12 programs) Goat farming (1 program) Pig farming (1 program) solar panel (1 program) additionally, two Kukkut Melas were conducted.

Distribution of resources

The following resources were provided to beneficiaries (1325 (F 830+M 495 from 72 different villages). Poultry: 14489 chicks of CARl germplasm (CARINIRBHEEK /CARISHYAMA), 17725 kg of compounded poultry feed, 60 goats and 16 pigs.

Skill development & energy support

110 sewing machines and 216 sewing machine kits 21 solar panels 52 Cobbler kit and 25 gum boots

Self-help groups (SHGs)

15 SHGs were established engaging 152 members primarily women, in activities such as poultry farming, goat farming, pig farming & apparel training under co-operation mode. In addition, Two Self-Help Groups (SHGs), namely CARISUJATA and CARIDEVKI,

were established under the SC category by engaging 24 men and women members in cooperative livelihood activities such as goat farming, pig farming, poultry farming, and apparel training.

Under TSP component of externally funded programs, two Self-Help Groups (SHGs), namely CARI RAJNI and CARI SUNITA, were established under the ST category by engaging 29 members, primarily women, in cooperative livelihood activities such as poultry farming.





Chick mother unit (CMU) collaboration

One MoU was signed under the CMU initiative, enabling Scheduled Caste (SC) beneficiaries to rear CARI germplasm chicks up to 4 wks of age. A total of 12561 chicks were procured from MoU, reinforcing efforts toward sustainable economic empowerment.

Success Stories

1. The CARI SURJEET Self Help Group (Poultry), Bisharatganj The CARI Surjeet Self-Help Group (SHG) of Bisharatganj, comprising 12 beneficiaries, successfully adopted backyard poultry farming after receiving 240 chicks, other related inputs and training from ICAR-CARI, Izatnagar. Through efficient management, the group produced and sold 1,200 eggs, earning ₹12,000, while the sale of 20 male birds and 50 female birds generated an additional ₹27,500. The SHG resulted in a total income of ₹39,500. After meeting production expenses of ₹15,000, the group earned a net profit of ₹24,500. This initiative significantly contributed to improving household income and demonstrated the effectiveness of backyard poultry farming as a sustainable livelihood option for rural communities.
2. The CARI Vimlesh Self-Help Group (SHG) of Kareli village, Kyara Block, comprising 12 beneficiaries, has successfully transformed tailoring into a sustainable source of livelihood. Under the DAPSC project, ICAR-CARI, Izatnagar the group received six sewing machines and twelve sewing kits, and training enabling members to develop their



stitching skills and establish a community-based apparel sewing enterprise. Through their collective efforts, the group stitches approximately 300 suits and 200 blouses every month, catering to local demand for tailoring services.

By charging ₹100 per garment, the group generates a monthly income of ₹50,000. After meeting operational expenses of ₹12,500, the enterprise yields a net monthly income of ₹37,500, providing an average earning of ₹3,125 per member per month. The initiative has enhanced the economic independence of the beneficiaries, particularly women, and demonstrated how skill-based microenterprises can create sustainable income opportunities and improve the livelihoods of rural households.



3. The CARI Savitri Self-Help Group (apparel sewing) of Tilmas village, Meerganj Block, comprising 12 beneficiaries, has successfully established an apparel sewing enterprise with support from ICAR-CARI in the form of six sewing machines, twelve sewing kits and necessary training under the DAPSC project. Equipped with tailoring skills and essential resources, the group members began providing stitching services within their community. On average, the group stitches 90 suits and 90 blouses every month, meeting local demand while creating a steady source of income.



By charging ₹150 per garment, the group earns an average monthly income of ₹27,000. With minimal operational expenses of ₹2,000 per month, the enterprise generates a net monthly income of ₹25,000, translating to an average earning of ₹2,083 per member per month. The initiative has improved the financial stability of the beneficiaries and empowered rural women through skill-based self-employment, demonstrating the potential of tailoring as a sustainable livelihood option.

Poultry Entrepreneurship Development-Establishment of agri-business incubator National Agriculture Innovation Fund (NAIF Component-II) (No. IP&TM-7(5)/2013-IPR dated 1.1.2016)

Table: Following two incubates graduated the incubation programme and started their business

Name of the incubate	Firm & Address
Shri Aman Gupta, Bangalore, Karnataka	Launched Krishicircle App (Aimed at farmers and poultry farmers: Connects users with community & expert support.
Shri Mohd. Rahbar	Shri Mohd. Rahbar, Sambhal, Uttar Pradesh - Broiler Farming

1. A total of 6 entrepreneurs/incubates were admitted for incubation programme.
2. Prepared success story in the form of a video account of Mr. Shaeque Ahmad, Puranpur, Pilibhit and published the same on the YouTube Channel.

Enhancing livelihood security of farming community through livestock and crop integration using proven technologies (No. A. Extn. - 20-3/2011- AE. I dated 28.10.16)

A total of 65 selected farmers were trained and provided with 240 chicks, 1540 kilos of poultry feed, 65 plastic drums, 65 drinkers and feeders and 30 units of night shelter.

Institute Technology Management Project-National Agriculture Innovation Fund (NAIF Component-I) (F.No. IP&TM-7(1)/2017-IPR dated 02.01.2018).

The ITMU has been operational in the Institute with Dr Sandeep Saran as its officer in-charge and PI to provide support to the IP enabled services. During the period under the report the following IP centric activities were carried out.

Additions to technology inventory of the institute:

- Novel formulation as an alternative to coccidiostats for mitigating coccidiosis in broiler chicken and preparation thereof (CARICOXICLEAN):** It was developed by Drs Gautham Kolluri, Shiva Kumar Kurva, Matin Ansari and J.S. Tyagi. It is used for mitigating coccidiosis infection in broilers as an alternative to conventional chemical based coccidiostats.
- CARI EGG DRINK:** It was developed by Drs Jaydip J Rokade, Aditya Adgaonkar, Sai Shiva, . Nagesh Sonale Sambhaji, Gauri Jairath, Ashim Biswas and A.K. Tiwari It is an excellent source of high-quality protein and lipids.
- CARI fermented chicken sausage:** It was developed by a team comprising of Drs Geeta, Ajit Singh Yadav, Jaydip Rokade, Ashim K. Biswas and Sandeep Saran. It is a functional value-added poultry product created through fermentation of minced spent hen with functional health benefits and improved consumer acceptability due to high protein value.

ITMC meetings: In all 3 ITMC meetings were conducted during 2025 (on 19.2.2025, 30.5.2026 and 22-23.7.2025) under the chairmanship of the Director. Dr Sandeep Saran, PS & I/c ITMU served as Member Secretary of the ITMC. As per the decisions taken during the above ITMC meetings, the following IP applications were filed. Some of the IP applications filed in previous years were also registered.

Design application filed

CARI EGG TESTING PLATFORM (developed by Drs. Jaydip Rokade, Sonale Nagesh, Prasad Wadajkar and Sandeep Saran) filed vide application no. 445809-001 dated 28.01.2025.

Copyright applications filed

Genome editing for enhancing health and welfare in poultry (Eds. Drs Gautham Kolluri, Md. Matin Ansari, Simmi Tomar, A.K. Tiwari and Jagbir Singh Tyagi) has been filed vide application no. LD-53559/2025-CO dated 22.12.2025.

Praudygik kukkut paalan (Eds Drs Simmi Tomar and A.K. Tiwari) has been filed vide application no. LD-53560/2025-CO dated 22.12.2025.

Copyright registered

बैकयाई कुक्कुट पालन (Eds by Drs Jaydip J Rokade, Roopsi Tiwari, Gautham Kolluri, Jagbir Singh Tyagi, Triveni Dutt and A.K. Tiwari) was registered vide L-161344/2025 dated 24.02.2025.

Development of true breeding improved native chicken with higher productivity for backyard poultry production (NLM Project) (F.No. R-300121 I 12022-DADF-Dept-Part (I) (E- 22977) dated 17 Jan 2024)

The study evaluated both first and second generations of crosses, with emphasis on growth performance, feed efficiency, reproductive performance, and conformation traits. Feed Conversion Ratio (FCR) was monitored wkly from 0–20 wks to assess growth efficiency. Key

morphometric traits such as shank length, keel length, and breast angle were measured, along with production traits including body weight gain, 72-wk body weight, and egg weight at 27 and 40 wks. Successfully implemented a structured breeding program aimed at developing true-breeding improved native chicken lines under NLM. In II generation the FCR for CARI NIRBHEEK (n=100) & CARISHYAMA (n=100) found to be 4.69 & 3.90 respectively at 10 wk period. The hatchability, body confirmation parameters & production traits shown the same trend as observed in previous generations

Table: FCR was recorded wkly from 0 to 20 wks to assess growth (n=100) 2nd Generation

Genetic Groups	Feed conversion ratio (FCR)									
	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20
CARINIRBHEEK	2.76	3.14	3.58	4.05	4.69	5.28	6.69	7.30	8.14	9.74
CARISHYAMA	2.08	2.35	2.82	3.33	3.90	5.96	6.59	7.21	8.15	10.65

Table. Reproductive traits of different crosses of Desi fowl 2nd Generation

Breed	Eggs Set (Nos.)	Good Chicks (Nos.)	Percent Fertility	Percent hatchability	
				TES	FES
CARINIRBHEEK	4142	2329	76.60	56.22	73.40
CARISHYAMA	4740	3225	90.10	68.03	75.50

All-India Network Programme on genome editing technologies (AINP-GET)

Development of gene edited chicken with enhanced resilience to avian influenza (H5N1)

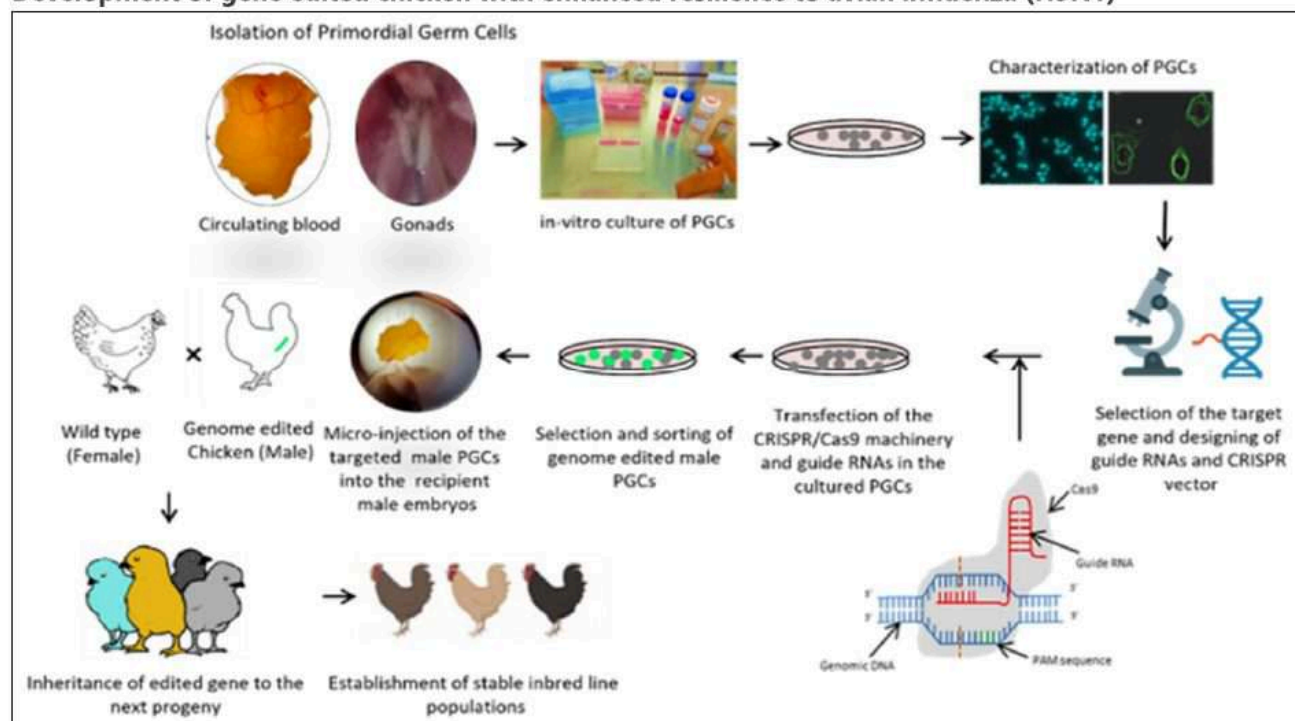


Figure. End-to-End pipeline for CRISPR editing in chickens. The pictorial representation of the whole process involved in generating a genome edited male chicken using CRISPR/Cas9 technology applicable in Primordial Germ Cells (PGCs)

Revival studies of cryopreserved PGCs A revival rate of approximately 30% was observed following 20 days of cryostorage, indicating comparatively higher post-thaw cell viability. However, after 45 days of cryopreservation, the revival efficiency declined markedly, with only about 5% of PGCs remaining viable after thawing. These findings suggest that prolonged cryostorage adversely affects the survival and recovery potential of PGCs.

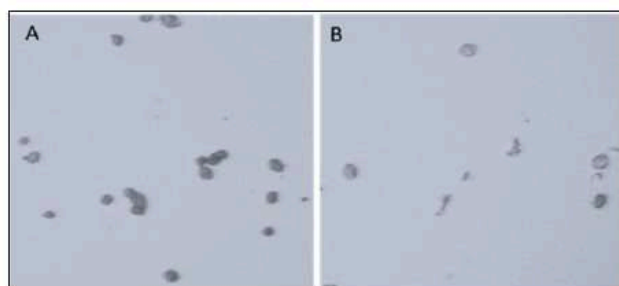


Figure: The cryopreserved primordial germ cells (PGCs) were successfully revived after 20 days (A) and 45 days (B) of storage.

Sequence alignment analysis revealed successful integration of designed gRNAs in to CRISPR plasmids.

CRISPRX459plasmid	CGAAACACCGGCTCTTCG---AGAAGACCTGTTTAGAGCTAGAAATAGCAAGTTAAAT	297
gRNA33sequence	CGAAACACCGGCTCTTCGAGGACAGGTACAGGTTTAGAGCTAGAAATAGCAAGTTAAAT	96
CRISPRX459plasmid	CGAAACACCGGCTCTTCG---AGAAGACCTGTTTAGAGCTAGAAATAGCAAGTTAAAT	297
gRNA36sequence	CGAAACACCGGCTCTTCGAGGACAGGTACAGGTTTAGAGCTAGAAATAGCAAGTTAAAT	95
CRISPRX459plasmid	CGAAACACCGGCTCTTCG---AGAAGACCTGTTTAGAGCTAGAAATAGCAAGTTAAAT	297
gRNA33sequence	CGAAACACCGGCTCTTCGAGGACAGGTACAGGTTTAGAGCTAGAAATAGCAAGTTAAAT	96
CRISPRX459plasmid	CGAAACACCGGCTCTTCG---AGAAGACCTGTTTAGAGCTAGAAATAGCAAGTTAAAT	297
gRNA242sequence	CGAAACACCGGCTCTTCGAGGACAGGTACAGGTTTAGAGCTAGAAATAGCAAGTTAAAT	78

Figure: Sequence alignment analysis with Clustal Omega (<https://www.ebi.ac.uk/Tools/msa/clustalo/>)

Development of myostatin gene edited chicken using CRISPR/Cas9 for augmenting growth and its evaluation for the feed efficiency

Isolation, cryopreservation, and characterization of chicken primordial germ cells (CPGCS)

The present study was conducted to comparatively evaluate fundamental methodologies for the isolation of avian PGCs, followed by their cryopreservation and preliminary characterization, along with a brief assessment of feeder-free culture conditions. PGCs were isolated from early-stage chicken embryos using three commonly employed approaches: blastodisc-stage isolation, blood aspiration, and gonadal isolation under a microscope. All three methods were assessed based on cell yield, morphology, post-isolation viability, recovery after

cryopreservation, selective enrichment through differential adhesion, and total number of PGCs isolated. The isolated PGCs were subsequently maintained in vitro using a feeder-free culture system supplemented with essential growth factors to support cell survival and stability.

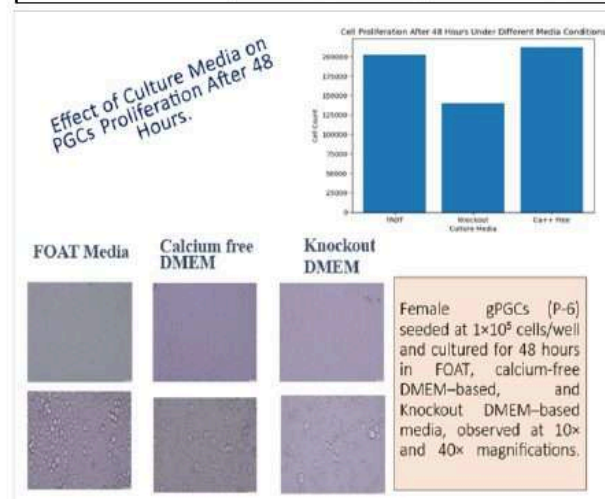
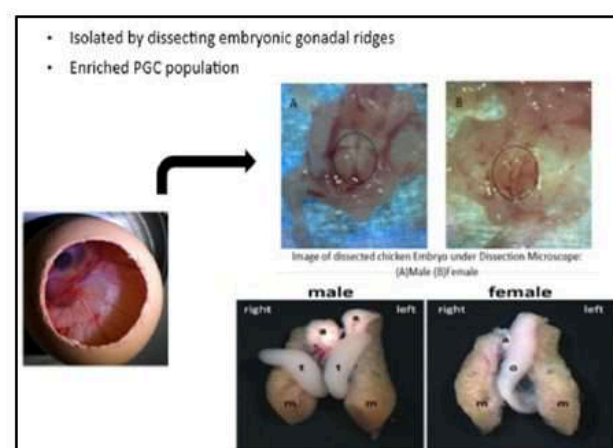
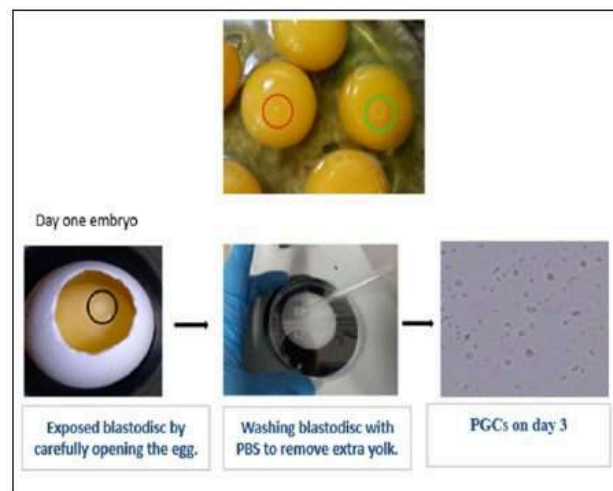


Figure (From to bottom): Isolation of PGCs from Blastoderm, PGCs and Effect of culture media on PGCs proliferation

Evaluating the efficacy of diverse range of chemicals in mitigating house fly and bed bug infestation under commercial layer settings

Comparative efficacy of dual chemical-based spray formulations against bed bug (*Cimex hemipterus*) infestation in caged poultry breeder units

Cimex hemipterus (tropical bed bug) is a hematophagous ectoparasite widely distributed in tropical and subtropical regions and is increasingly reported in Indian layer and breeder poultry farms. Blood feeding causes irritation, reduced comfort, and production losses in affected birds. Heavy infestations result in repeated blood loss, anaemia and produce localized inflammation and scab formation around the vent, breast, and legs, predisposing birds to secondary bacterial infections and pecking injuries with compromised immunity. This study evaluated the efficacy of two dual-active insecticidal formulations against *C. hemipterus* under laboratory and field conditions over 30 days (D). Two severely infested poultry breeder cage houses (layer and broiler) and corresponding non-infested control houses were selected, with three cage units per house serving as replicates. In vitro knockdown assays were performed by exposing groups of ten bed bugs in Petri plates to insecticides using a glass atomizer, with mortality recorded at 5-m intervals up to 30 m. Field evaluations involved spraying insecticides at an application rate of 50 mL per sq. mt. Formulation 1

(Bifenthrin 2.5% + Acetamiprid 2.1%) was applied at 10 mL/L and Formulation 2 (Imidacloprid 21% + Beta-cyfluthrin 10.5%) at 4 mL/L on Day 1 and 14. Bed bug populations were monitored using glue-based trap cards, with eight traps installed on cages and four on adjacent walls. Visual inspections were conducted on D0, D2, D13, and D29, while trap retrieval and counts were performed on D1, D3, D14, and D30. Severe infestation was defined as counts exceeding ten bed bugs per trap. One-way ANOVA showed significant reductions in bed bug populations, with 82–87% efficacy by D3. Mean trap counts on D3 were 1.33 for Formulation 1 and 1.67 for Formulation 2, corresponding to reductions of 87% and 80%, respectively. From the second spray (D14) onward, bed bug counts dropped to zero and remained undetectable through D30, indicating effective and sustained control. In vitro trials demonstrated rapid knockdown, with Formulation 1 inducing mortality in an average of 8.2 m and Formulation 2 in 5.5 m. Both formulations act on the insect nervous system, causing rapid paralysis and death. The study demonstrates that dual-active neonicotinoid–pyrethroid formulations provide rapid and highly effective control of *C. hemipterus*. Repeat application after D14–15 effectively disrupts the bed bug life cycle and may help delay the development of insecticide resistance, supporting their use in integrated bed bug management in poultry production systems.



Source CARI

4. P.G. Students' Research and Education

The Post Graduate Education and Training (PGET) Section coordinated and monitored the post graduate education programme leading to MVSc, PhD degree in Poultry Science (PSC) discipline and National Diploma in Poultry Husbandry (NDPH) course under the IVRI Deemed University, Izatnagar. The Section also co-ordinates PG education leading to MVSc and PhD degree in

Animal Genetics and Breeding/Animal Science/Livestock Production & Management /Poultry Science under the State Agricultural University/ State Veterinary University. Besides this, section also conducting internship training programme for BVSc students of ICAR-IVRI Deemed University.

Annual intake of PG poultry science students (2025)

Degree program	Discipline	Annual Intake	Degree awarded by
MVSc	Poultry Science	9+6*	Deemed University, IVRI, Izatnagar
PhD	Poultry Science	4+3*	
NDPH	Poultry Science	Nil	

* Students for ICAR-DPR, Hyderabad

Post graduate students of poultry science on roll at ICAR-CARI, Izatnagar (29)

M.V.Sc. (18)	Ph.D. (11)
Dr K Nagabhushan	Dr Siddhartha Srivastava
Dr. Priyanka Sharma	Dr. Abdul Muneer Kandangal
Dr. Priyanka Parte	Dr. Vikash Bhardwaj
Dr Surya Pratap Dhakare	Dr. Hudson G.H
Dr Bhutekar Prashant Vitthal	Dr. Sruthy Ravi
Dr Mortel Rushikesh	Dr. Kanmoni Goyari
Dr Aditya Balasaheb Adgaonkar	Dr K.Sai Siva Kumar
Dr Sachin S. Choudhary	Dr Jai Prakash
Dr Sagnik Das	Dr Wadajkar P. Shivaji
Dr K.Martina	Dr Shiv Kumar Kurva
Dr Medasani Geethanjali	Dr Buddhhe Lokesh
Dr Harsha P	
Dr Avni Sachan	
Dr Rida Fatima	
Dr Shubham Dabi	
Dr Aashutosh Barath	
Dr Nada Tado Rono	
Dr Komal Mishra	

Degree awarded from the IVRI Deemed University

Sl. No.	Name of the student with roll number	Thesis Title	Guide
Ph.D.			
1.	Dr Sruthy Ravi (P-2542)	"Efficacy of noval herbal immune modulator on the performance of broiler and layer chickens."	Dr Avishek Biswas
M.V.Sc.			
1.	Dr Sagnik Das (M-6676)	Effect of essential oil-based nano-emulsion formulation on production and immunity in Broiler.	Dr Divya
2.	Dr Aditya Adgaonkar (M-6645)	Development and quality evaluation of egg-based drink.	Dr Jaydip Rokade
3.	Dr K. Martina (M-6666)	Effect of egg size and hatch synchronization on molecular and morphological development in Japanese quail.	Dr M.M. Ansari
4.	Dr Bhutekar Prashant V. (M-6652)	Unravelling the physiological responses to heat stress in chickens: A comparative study across genetic variants.	Dr Goutham Kolluri
5.	Dr Mortale Rushikesh R. (M-6660)	Effect of feeding variable dietary energy and protein levels on the performance of CARI Debendra dual purpose chickens.	Dr Chandra Deo
6.	Dr Surya Pratap Dhakare (M-6667)	Development and evaluation of lipid encapsulated multistrain probiotics in broiler chickens.	Dr Simmi Tomar

Seminars Organized:			
Major Credit Seminar:			
Ph.D.			
1.	Dr K. Sai Siva Kumar (P-2576)	Feeding the future: Algae's vital role in poultry sustainability.	17.01.25
2.	Dr Kurva Shiva Kumar (P-2713)	Edible insect meal as sustainable protein source in poultry nutrition.	14.10.25
3.	Dr Wadajkar Prasad Shivaji (P2672)	Flavonoid in sustainable poultry farming.	06.10.25
4.	Dr Jai Prakash (P-2729)	The effect of cold storage, transport on table egg.	05.12.25
M.V.Sc.			
1.	Dr Subham Dabi (M-6796)	Antimicrobial peptides (AMPS): A promising alternative to antibiotics in poultry production.	21.11.25
2.	Aashutosh Barath (M-6807)	Role of stimbiotics in poultry nutrition.	24.11.25
3.	Dr Medasani Geethanjali (M-6771)	Early post Hatch Nutritional Modulation of Gut Brain Axis in poultry.	24.11.25
4.	Dr Avni Sachan (M-6716)	Sialic acid receptors in poultry: Biological basis and implications for host pathogen (Avian Influenza) interactions.	19.12.25
5.	Dr Rida Fatima (M-6842)	Egg value addition: Egg powder as a sustainable alternative.	19.12.25
6.	Dr Komal Mishra (M-6784)	Nanoparticles: Sustainable and efficient alternative to antibiotic.	19.12.25
7.	Dr Prashant M.R. (M-6795)	Advances in prevention and control of coccidiosis in chickens.	19.12.25
ORW Seminars			
Sl No.	Name of the student with roll number	Topics	Date of seminar
Ph.D.			
1.	Dr K.Sai Siva Kumar (P-2576)	Nano phytobiotics in poultry: A comparative insight into in-ovo and post hatch strategies for enhancing broiler performance.	11.07.25
M.V.Sc.			
1.	Dr Aditya Adgaonkar (M-6645)	Protein rich egg milk Nutri-drink: A Scientifically designed formulation for comprehensive nutritional support.	18.02.25
2.	Dr Mortale Rushikesh R. (M-6660)	Effect of feeding variable dietary energy and protein levels on the performance of CARI Debendra Chickens.	18.02.25
3.	Dr Sagnik Das (M-6676)	Effect of menthe longifolia and basil essential oil-based nano-emulsion formulation on production and antimicrobial resistance pattern on E coli in broiler chickens.	18.02.25
4.	Dr Surya Pratap Dhakare (M-6667)	Development of lipid encapsulated multi strain probiotics and its effect on production performance, immunity and guts health in broiler chickens.	25.03.25
5.	Dr K. Martina (M-6666)	Effect of egg size and thermal conditioning on embryonic development, hatchability traits and post hatch performance in Japanese Quail (Coturnix coturnix Japonica).	25.03.25
6.	Dr Bhutekar Prashant V. (M-6652)	"Unravelling the physiological responses to heat stress in broiler: A comparative study across genetic variants.	25.03.25
Pre-thesis Submission Seminars			
Sl No.	Name of the student with roll number	Topics	Date of seminar
Ph.D.			
1.	Dr. Sruthy Ravi (P-2542)	Efficacy of noval herbal immune modulator on the performance of broiler and layer chickens.	01.08.25
2.	Dr Hudson G.H. (P-2536)	Development and evaluation of species specific symbiotic in broiler chicken	05.12.25

M.V.Sc.			
1.	Dr Sagnik Das (M-6676)	Effect of essential oil-based nano-emulsion formulation on production and immunity in Broiler	11.08.25
2.	Dr Aditya Adgaonkar (M-6645)	Development and quality evaluation of egg-based drink.	11.08.25
3.	Dr K. Martina (M-6666)	Effect of egg size and hatch synchronization on molecular and morphological development in Japanese quail.	06.10.25
4.	Dr Bhutekar Prashant V. (M-6652)	Unravelling the physiological responses to heat stress in chickens: A comparative study across genetic variants.	14.10.25
5.	Dr Mortale Rushikesh R. (M-6660)	Effect of feeding variable dietary energy and protein levels on the performance of CARI Debendra dual purpose chickens.	14.10.25
6.	Dr Surya Pratap Dhakare (M-6667)	Development and evaluation of lipid encapsulated multistrain probiotics in broiler chickens.	21.11.25

Internship training programme for B.V.Sc. students:

Internship training programme was conducted for BVSc students from 23.08.25 to 04.10.2025(42days) at ICAR-CARI, Izatnagar to acquire high class skill in layer production, broiler production and hatchery and chick's management. There are total-19 students (15boys and 04 girls).

List of courses as per new education policy for MVSc and Ph.D. students (I Semester)

Course Code	Course Title	Theory (T)/ Practical(P)	Credit Hour(s)
PSC-601	Poultry Breeding and Genetics	T+P	2+1
PSC-602	Poultry Nutrition and Feeding	T+P	2+1
PSC-604	Breeder Stock and Hatchery Management	T+P	2+1
PSC-605	Poultry Health and Biosecurity	T+P	2+1
PSC-606	Management of Other Avian Species	T+P	3+1
PSC-691	Major /Minor credit seminar	P	1
PSC-699	Research (For MVSc)	P	15
PSC-701	Applied Poultry Nutrition	T+P	2+1
PSC-703	Development in Poultry Processing & Products Technology	T+P	2+1
PSC-707	Diversified Poultry Production	T+P	1+1
PSC-791	Major credit seminar	P	1
PSC-799	Research (For PhD)	P	15

List of courses for MVSc and Ph.D. students (II Semester)

Course Code	Course Title	Theory (T)/ Practical(P)	Credit Hour(s)
PSC-603	Commercial Layer and Broiler Management	T+P	2+1
PSC-607	Poultry Products Technology	T+P	2+1
PSC-608	Poultry Economics, Project Formulation and Marketing	T+P	2+1
PSC-609	Physiology of Poultry Production	T+P	1+1
PSC-610	Commercial Poultry Nutrition	T+P	1+1
PSC-611	Poultry Welfare and Waste Management	T+P	2+0
PSC-691	Major /Minor credit seminar	P	1
PSC-699	Research (For MVSc)	P	15
PSC-702	Recent Trends in Commercial Poultry Production	T+P	2+1
PSC-704	Emerging Diseases of Poultry and Health Management	T+P	2+1
PSC-705	Applied Poultry Breeding	T+P	1+1
PSC-706	Poultry Economics, Marketing and Integration	T+P	2+1
PSC-791	Major credit seminar-II	P	1
PSC-799	Research (For PhD)	P	15

List of courses-NDPH (I and II Semester)

I Semester		
Course code	Name of course	Theory (T)/Practical(P)
NPH-401	Principles of Poultry Nutrition	T-1
NPH-402	Analysis of Poultry Feeds	L-1
NPH-403	Egg Products Technology	T-1
NPH-404	Egg Processing Technology	L-1
NPH-405	Fundamentals of Avian Genetics	T-1
NPH-406	Quantification of Avian Genetics	L-1
NPH-407	General Avian Physiology	T-1
NPH-408	Physiological Evaluation	L-1
NPH-409	Incubation and Hatching	T-1
NPH-410	Hatchery Operation	L-1
NPH-411	Importance of Poultry Diseases	T-1
NPH-412	Diagnosis of Poultry Disease	L-1
II Semester		
NPH-413	Poultry Breeding	T-1
NPH-414	Evaluation of Breeding Techniques	L-1
NPH-415	Reproductive Physiology	T-1
NPH-416	Reproductive Physiological Techniques	L-1
NPH-417	Applied Poultry Nutrition:	T-1
NPH-418	Poultry Feed Technology	T-1
NPH-419	Poultry Meat Products Technology	T-1
NPH-420	Poultry Meat Processing Technology	L-1
NPH-421	Poultry Housing and Management	T-1
NPH-422	Poultry Management Practices	L-1
NPH-423	Poultry Disease Management	T-1
NPH-424	Disease Prevention and Treatment	L-1



ICAR-CARI students attending ICAR-IVRI convocation on June 30, 2025

5. Awards and Recognition

- Dr N. Deshpande was awarded with 2 Best Poster Presentation Award for the research paper entitled *"Evaluating Nutrient Retention in CARI Nirbheek Chickens Fed with Variable Dietary Energy and Protein Levels"* authored by N. Deshpande, C. Deo, S.E. Jadhav, A. Biswas, Divya, J. Rokade, T.K. Rathod, S.Q. Nagre and G. Deshmukh during the World Animal Nutrition Conference held at MAFSU, Nagpur from January 20–22.
- Dr A.K. Tiwari coordinated the technical session "Advances in Poultry" during the XVII ASC held at GBPUAT, Pantnagar in February.
- Dr G. Kolluri and Dr J.J. Rokade acted as co-coordinators in organizing the technical session "Advances in Poultry" during the XVII ASC held at GBPUAT, Pantnagar in February.
- Dr Simmi Tomar acted as Co-Chair of the technical session "Advances in Poultry" during the XVII ASC held at GBPUAT, Pantnagar from February 20–22.
- Dr N. Deshpande was awarded with 2 Best Presentation Award for the research paper entitled *"Effect of Variable Dietary Energy and Protein Levels on Meat Quality and Composition of CARI Nirbheek Chickens"* authored by Deshpande, N., C. Deo, Divya, A. Biswas, S.E. Jadhav, J. Rokade, P. Rai and R. Mortale during the WVPA held at RIVER, Puducherry from February 27–28.
- Dr K. Sai Siva Kumar was awarded with 3 Best Poster Presentation Award under the student category for the research paper entitled *"Effect of Inclusion of Black Soldier Fly Larvae (Hermetia illucens) Meal in the Diet on Growth Performance and Meat Quality of Broiler Quails"* authored by Monika, M., J.J. Rokade, N. Sonale, A.B. Adgaonkar and K. Sai Siva Kumar during the WVPA India Conference held at Puducherry, India from February 27–28.
- Dr Martina K. was awarded with Best Oral Presentation Award for the research paper entitled *"Effect of Thermal Manipulation During Incubation on Embryonic Development and Hatchability of Japanese Quail"* authored by Martina, K., M.M. Ansari, G. Kolluri, J.S. Tyagi, J.J. Rokade and P. Bhutekar during the WVPA held at RIVER, Puducherry from February 27–28.
- Dr Simmi Tomar organized the International Technical Workshop entitled "Applied Poultry Genomics and Transcriptomics: Unlocking the Molecular Keys to Avian Health and Productivity" during the Plant and Animal Genome Conference (PAG Asia-2026, International) held at Gurgaon from March 18–20.
- Dr Simmi Tomar was invited as Lead Speaker for *"Whole Genome Sequencing and Genomic Insights of Indian Red Jungle Fowl"* during the Plant and Animal Genome Conference (PAG Asia-2026, International) held at Gurgaon from March 18–20.
- Dr Simmi Tomar was invited as Lead Speaker for *"Genomic Signatures of Selection in Guinea Fowl: A Whole Genome Perspective"* during the Plant and Animal Genome Conference (PAG Asia-2026, International) held at Gurgaon from March 18–20.
- Dr G. Kolluri was invited as Lead Speaker for *"Transcriptomic Insights into Disease Resilience in Poultry"* during the Plant and Animal Genome Conference (PAG Asia-2026, International) held at New Delhi Gurgaon from March 18–20.
- Dr Sandeep Saran was nominated by Agrinnovate India, New Delhi as a Member of "Techno Commercial Assessment and Expert Committee" at ICAR-NMRI, Hyderabad on April 09.
- Dr G. Kolluri was invited as Lead Speaker for *"Pre and Post-Operative Procedure for Control and Containment of Avian Influenza"* during a Training of Trainers (ToT) on "Prevention, Control & Containment Of Avian Influenza (Bird-Flu) Technical Aspects & Workshop On ONE HEALTH Global Scenario" programme organized by Department of Animal Husbandry, Uttar Pradesh held at Lucknow in July 07-08.
- Dr Sandeep Saran was invited as Lead Speaker for *"Project planning to establish soy processing enterprise"* organized by Centre for Excellence on Soybean Processing & Utilization held at ICAR-CIAE, Bhopal on July 18.
- Dr Kanmoni Goyari was awarded with 2 Best Poster Presentation Award for the research paper entitled *"Effect of Fermented Cauliflower Leaves Supplemented to Broiler Chicken Diet on Carcass and Meat Quality Parameters"*

authored by K. Goyari, D. Sharma, C. Deo, J. Rokade, G. Kolluri and A.K. Biswas during the IMSACON-XIII held at ICAR-IVRI, Bareilly from November 19–21.

- 🏆 Dr Geeta P. was awarded with 2 Best Oral Presentation Award for the research paper entitled *"Shelf-Life Evaluation of Protein Enriched Traditional Snack Chakli"* authored by Geeta, J.J. Rokade, A.K. Biswas, K. Sai Siva Kumar and A.B. Padgaonkar during the IMSACON-XIII held at ICAR-IVRI, Bareilly from November 19–21.

- 🏆 Dr G. Kolluri was awarded with 3 Best Oral Presentation Award for the research paper entitled *"Postbiotics Supplementation Enhances Performance and Stress Resilience in Broilers under Hot-Humid Conditions"* authored by K. Shiva Kumar, J.S. Tyagi, M.M. Ansari and G. Kolluri during the CLIMATECON held at ICAR-NIANP, Bengaluru from November 23–24.

- 🏆 Dr Chandra Deo was awarded Fellow of Indian Poultry Science Association during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr G. Kolluri was awarded with 2 Best Oral Presentation Award for the research paper entitled *"Effect of Different-Sized Eggs During Incubation on Yolk Sac and Intestinal Expression of Nutrient Transport Genes in Japanese Quails"* authored by Martina, K., M.M. Ansari, G. Kolluri, J.S. Tyagi, J.J. Rokade, P. Bhutekar, A. Naim and M. Geethanjali during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr Geeta P. was awarded with IPSA Ayurved Research Award for the best research paper entitled *"Role of Lactobacillus plantarum, Dextrose and Starch on the Storage Stability and Quality Attributes of Fermented Chicken"* published in Indian Journal of Poultry Science authored by Geeta Pipaliya and A.S. Yadav during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr A. Champati was awarded with Kerala Chapter IPSA Award for the best research paper entitled *"Dietary Supplementation of Formic Acid and Thymol as an Antimicrobial Alternative Improved Production, Gut Health and Carcass Traits in Turkeys"* published in Indian Journal of Poultry Science authored by Champati, A., S.K. Bhanja, A.S. Yadav, J.J. Rokade, Divya, A. Biswas, S.K. Saha, M. Singh, R.K. Agrawal and N. Nayak during the XXXX

IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr A.B. Adgaonkar received the "IPSA Young Scientist Award" from the Indian Poultry Science Association for the research paper entitled *"Development and Quality Evaluation of Egg Drink"* authored by A.B. Adgaonkar, J.J. Rokade, G. Kolluri, G. Jairath and N. Sonale during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr K. Sai Siva Kumar was awarded the "Dr. P. Kothandaraman Memorial Award" (Male) for the research paper entitled *"Sustainable Protein for Quails and its Economic Viability"* authored by K. Sai Siva Kumar, Monika, M., N.S. Sonale and J.J. Rokade during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr M. Rushikesh was awarded with 2 Best Poster Presentation Award for the research paper entitled *"Standardizing Dietary Energy and Protein Requirements for CARI Debendra Dual Purpose Chickens"* authored by M. Rushikesh, C. Deo, Divya, J. Rokade, S.E. Jadhav, M.A. Wani, N. Deshpande, P. Rai and B. Ashutosh during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr Prasad Wadajkar has received the "IPSA-Andhra Pradesh Chapter Award for Best M.V.Sc Dissertation" from the Indian Poultry Science Association during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11 (Guide: Dr. Rokade, J.J.).

- 🏆 Dr Rida Fatima was awarded with 2 Prize in Poster Presentation for the poster entitled *"Microbiological Evaluation of Flavoured Egg-Based Drinks During Storage"* authored by R. Fatima, A.B. Adgaonkar, J.J. Rokade, Geeta Pipaliya, K. Sai Siva Kumar and V. Srivastava during the XXXX IPSACON held at ICAR-DPR, Hyderabad from December 9–11.

- 🏆 Dr J.J. Rokade was awarded Young Scientist Award in Veterinary Sciences by NAVS during its 23 Scientific Convocation-cum-National Conference held at Patna on December 22.

- 🏆 Dr J.J. Rokade was selected as Executive Member of the Indian Association for the Advancement of Veterinary Research (IAAVR) and Cage Free- and Free-Range Poultry Producers Association (CFRPPA).

6. Linkages and Collaborations

Linkage	Purpose
Veterinary College & Research Institute, Salem	Resource person
College of Veterinary Sciences & Animal Husbandry, Jabalpur	Resource person
Rajasthan Agricultural University, Bikaner	Resource person
Anand Agricultural University, Gujarat	Resource person
VAL-CO, Bareilly	Resource person
M/s Godrej Agrovet, Maharashtra	Resource person
M/s Premium Chick Feed Ltd., Mumbai	Resource person
APEDA, New Delhi	Resource person
M/s CEXPERT, New Delhi	Resource person
M/s Carnus Private Limited, Nagpur, Maharashtra	Resource person
M/s Khara Farms, Himachal Pradesh	Resource person

Following MoUs were signed

S.No	Purpose of the MoU	Contracting Party	Date of Signing MoU
1.	For facilitating of Training/Research (Umbrella MoU)	Mahatma Jyotiba Phule Rohilkhand University, Bareilly	22.02.2025
2.	For Contract Research Project	M/S Envu India, Mumbai	03.02.2025



7. Publications

Research and Review Articles

International Journals

Anand, T.S., Biswas, A.K., Biswas, S.K., Agrawal, R.K., Singh, P., Talukder, S., Dhanze, H., Rokade, J.J., Rahman, C.K.F., Bora, B., Agrawal, N., Ahmad, T., Kumar, D., Chand, S. and Sen, A.R. (2025). Development and validation of mitochondrial citrate synthase enzyme-based sandwich ELISA for reliable authentication of fresh vs frozen thawed pork meat. *Food Control*, 171: 111672. (NAAS SCORE: 10.80)

Anand, T.S., Biswas, A.K., Biswas, S.K., Rahman, C.K.F., Agrawal, R., Talukder, S., Sen, A.R., Chand, S., Singh, P., Dhanze, H., Rokade, J.J., Bora, B. and Agrawal, N. (2025). Mitochondrial citrate synthase enzyme biomarker assisted novel sandwich ELISA for authentication of fresh vs. frozen thawed chicken meat. *Journal of Food Sci. and Technology*, 1–12. (NAAS SCORE: 6.50)

Bakhasha, J., Saxena, V., Arya, N., Kumar, P., Srivastava, A., Yadav, K.K., Tomar, S., Mishra, S., Banaee, M., Faggio, C. and Trivedi, A. (2025). Neurotoxic synergy of copper and PVC microplastics triggers apoptosis via the BDNF/miR-132/FOXO3a pathway for the first time in fish brain. *Comparative Biochemistry & Physiology Part C: Toxicology & Pharmacology*, 270: 110265. (NAAS SCORE: 10.03)

Biswas, A., Deo, C., Sharma, D. and Tiwari, A.K. (2025). Supplementation of dietary probiotics improves performance, physicochemical characteristics and oxidative stability of broiler meat. *ACS Food Science and Technology*, 6(1): 51–60. (NAAS SCORE: 9.03)

Girija, S., Kolluri, G., Tyagi, J.S., Kurva, S.K., Sahoo, P.R., Srivastava, V. and Singh, T. (2025). Postbiotics: The dynamic biomolecules in poultry nutrition, health, and production. *Probiotics and Antimicrobial Proteins*, 17: 1–18. (NAAS SCORE: 10.40)

Gopi, M., Prabakar, G., Rokade, J.J., Kolluri, G., Beulah, P., Tyagi, J.S. and Mohan, J. (2025). Effect of maternal zinc supplementation on offspring hatchability, growth performance and intestinal development in broiler chickens. *Scientific Reports*, 15(1): 35784. (NAAS SCORE: 9.90)

Mohan, S., Madheshwaran, M., Kumar, A., Mariappan, G., Biswas, A.K., Rokade, J.J., Sonale, N., Tiwari, A.K. and Singh, Y. (2025). Evaluating the impact of pre-slaughter transport stress on broiler welfare and meat quality in India. *Scientific Reports*, 15(1): 39725. (NAAS SCORE: 9.90)

Ravi, S., Biswas, A., Kolluri, G., Pipaliya, G., Deo, C., Rokade, J.J., Goyari, K. and Parte, P. (2025). Herbal immunomodulators as functional feed additives: Impact on broiler meat quality, intestinal morphometry and serum biochemical profile. *Scientific Reports*, 15: 39771. (NAAS SCORE: 9.90)

Rokade, J., Gopal, S.K., Khulape, S., Sonale, N., Patel, P., Champati, A., Kolluri, G. and Madheswaran, M. (2025). Effects of transport stress on gene expression and biomarkers in broilers with and without an anti-stress supplement. *Animal Production Science*, 65(9). (NAAS SCORE: 8.20)

Sonale, N., Rokade, J.J., Kumar, A., Madheswaran, M., Kumar, R., Wadajkar, P. and Tiwari, A.K. (2025). Novel film-forming spray: Advancing shelf-life extension and post-harvest loss reduction in eggs. *Polymers*, 17(15): 2142. (NAAS SCORE: 8.70)

Thakur, R., Chandras, Tarafdar, A., Yadav, S., Godara, R., Singh, M., Deo, C. and Narayan, R. (2025). From litter to energy: Effect of alkali pretreatment on biogas production from poultry litter and slurry characteristics. *Energy for Sustainable Development*, 88: 101799. (NAAS SCORE: 10.90)

Trivedi, A., Bakhasha, J., Saxena, V., Arya, N., Kumar, P., Srivastava, A., Saxena, V., Yadav, K.K., Tomar, S. and Jadhao, S.B. (2025). Understanding cuproptosis through FDX1-mediated lipoylation and proteotoxic stress in *Channa punctatus*. *Journal of Hazardous Materials Advances*, 100788. (NAAS SCORE: 13.70)

National Journals

Buddhe, L.S., Tomar, S., Hudson, G.H., Narayan, R. and Tiwari, A.K. (2025). Expression profile of feed efficiency related genes in high and low feed-efficient colored synthetic male line (CSML) broiler chickens. *Indian Journal of Animal Research*, 1–8. (NAAS SCORE: 10.40)

- Deo, C., Divya, S., Kumar, S.S., Adgaonkar, A.B. and Rokade, J.J. (2025). Response of feeding different levels of dietary phosphorus and supplemental vitamin D3 on production performance, egg quality traits and serum biochemical parameters in laying hens. *Animal Nutrition and Feed Technology*, 25: 145–162. (NAAS SCORE: 5.00)
- Deo, C., Sharma, D., Kumar, S.S., Adgaonkar, A.B. and Rokade, J.J. (2025). Response of feeding different levels of dietary phosphorus and supplemental vitamin D3 on production performance, egg quality traits and serum biochemical parameters in laying hens. *Animal Nutrition and Feed Technology*, 25: 197–208. (NAAS SCORE: 5.00)
- Gowthaman, V., Das, S., Sharma, D., Deo, C., Biswas, A. and Biswas, A.K. (2025). Effect of liquorice (*Glycyrrhiza glabra*) on meat quality parameters of Kadaknath chickens. *Indian Journal of Poultry Science*, 60(3): 227–232. (NAAS SCORE: 5.30)
- Goyari, K., Sharma, D., Deo, C., Rokade, J., Tyagi, J.S., Jadhav, S.E., Biswas, A.K. and Ravi, S. (2025). Effect of feeding fermented cauliflower leaves on growth performance, serum biochemical and immune response of broilers. *Indian Journal of Poultry Science*, 60(3): 245–251. (NAAS SCORE: 5.30)
- Kolluri, G., Sai Shiva Kumar, K. and Tiwari, A.K. (2025). Avian influenza in India: A comprehensive review of past trends, current challenges and future outlook. *Indian Journal of Comparative Microbiology Immunology and Infectious Diseases*, 46(1): 72–86. (NAAS SCORE: 4.49)
- Krishna, K.S., Narayan, R., Rokade, J., Verma, M.R., Monika, M. and Govindaiah, P.M. (2025). Partial periods for genetic evaluation of egg production and egg quality attributes in two varieties of Japanese quails. *International Journal of Veterinary Sciences and Animal Husbandry*, 10(12): 440–445.
- Kumar, S., Anjaneyulu, A.S.R., Majumdar, S., Gadekar, Y.P. and Rokade, J.J. (2025). Comparative costs of Black, Beltsville White turkey and broiler spent hen restructured meat blocks. *Indian Journal of Poultry Science*, 60(3): 289–294.
- Monika, M., Rokade, J.J., Gopi, M., Vispute, M., Sonale, N., Prasad, W. and Bhanja, S.K. (2025). Mitigation of heat stress in broiler chickens during hot summer seasons through betaine hydrochloride osmo-protectant intervention. *Indian Journal of Animal Research*, 59(3): 490–496.
- Patnaik, N.M., Pandey, D.K., Das, U. and Acharya, Geeta, P. (2025). Balancing livestock production and environmental sustainability: insights from the Indian context. *Current Science*, 129(7): 1389–1391. (NAAS SCORE: 7.0)
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Merina, K., Gyaneshori Devi, T., Imtiwati, I., Mili, B., and Ansari, M.M. (2025). Tips for commercial layer farming. Published by CVSC &AH, Central Agricultura University (I), Jalukie, Nagaland, India, pp. 1-2 (Publication Publication No. COVSC-JLK/CAU/2025/PL/08



Source CARI

8. Participation in Workshops, Webinars, Conferences and Training

Programme	Duration	Participants
National		
AICRP Annual Review Meeting-2025 at ICAR, New Delhi	January 27-28	Dr Simmi Tomar
25th Indian Veterinary Congress & 32 nd Annual Conference of Indian Association of Animal and Veterinary Research	February 07-08	Dr Rokade, J.J
XVII Agricultural Science Congress at GBPUAT, Pantnagar	February 20-22	Dr A K Tiwari Dr J S Tyagi Dr Raj Narayan Dr Sandeep Saran Dr Chandra Deo Dr Simmi Tomar Dr Divya Dr M P Sagar Dr Gautham Kolluri Dr Rokade, J.J. Dr Matin Ansari
Orientation Workshop on Mission Karmayogi I-GOT	February 27	Dr. Matin Ansari
World Veterinary Poultry Association (WVPA) Conference 2025 at RIVER, Puducherry	February 27-28	Dr Simmi Tomar
Mid Review Meeting on AINP on Genome Editing Technology for Improvement in Livestock Health and Production at ICAR-IVRI, Bareilly	March 05	Dr Simmi Tomar Dr Gautham Kolluri
Training of Trainers (ToT) on Prevention, Control & Containment of Avian Influenza (Bird-Flu) Technical Aspects & Workshop on ONE HEALTH Global Scenario at UPAHD, Lucknow	July 07-08	Dr Gautham Kolluri
CSE sponsored Training cum Workshop on Scaling up Preventive Approaches in the Indian Poultry Sector to Minimize Antibiotic Use at Anil Agarwal Environment Training Institute (AAETI), Nimli, Rajasthan	August 19-21	Dr Rokade, J.J Dr Gautham Kolluri
23 rd Annual Conference & National Symposium Indian Meat Science Association (IMSACON) at ICAR-Indian Veterinary Research Institute, Izatnagar	November 19-21	Dr Rokade, J.J. Dr Geeta
National Conference on Climate Resilient Livestock Production: Emerging Concepts and Technologies for Sustenance (CLIMATECON2025) at ICAR-National Institute of Animal Nutrition and Physiology, Bengaluru	November 23-24	Dr Gautham Kolluri
17 th edition of Poultry India Expo-2025 at HITEX, Hyderabad	November 25-28	Dr Simmi Tomar Dr Gautham Kolluri Dr Rokade, J.J.
40 th Annual Conference & National Symposium of Indian Poultry Science Association (IPSACON 2025) at ICAR-Directorate Poultry Research, Hyderabad	December 9-11	Dr Raj Narayan Dr Chandra Deo Dr Simmi Tomar Dr Rokade, J.J. Dr Gautham Kolluri

International		
International Plant and Animal Genome Conference (PAG-2025) at Gurgaon, Haryana	March 18-20	Dr Simmi Tomar Dr Gautham Kolluri
Discussion Meeting on ACASA livestock results and use cases at CIMMYT-BISA office, New Delhi	July 31	Dr J.S. Tyagi
International Training Workshop on PGCs Biobanking and Surrogate Technology for Conservation and Development of Chicken Genetic Resources	October 27-31	Dr Gautham Kolluri Dr Matin Ansari Dr Geeta Dr Manzoor Wani
Follow up ACASA Write-shop on Climate Risks and Adaptation Options at Borlaug Institute for South Asia, Mumbai (Virtual mode)	October 28-30	Dr J.S. Tyagi



Source CARI

9. Consultancy, Patents, Commercialization of Technology

MoUs Signed for Supply of Germplasm

Following MoUs were signed with various clients in private and public sector for supply of pure line /improved germplasm developed by the Institute. These MoUs were signed in accordance with the germplasm supply policy adopted by the Institute in order to safeguard its intellectual properties. A total of INR Rs. 12,16,035/- has been realized in 2025 through germplasm (Rs. 9,17,895/-), technology licensing (Rs. 23,040/-), EDP charges (Rs. 2,52,500/-) and sale of books (Rs. 22,600/-).

Sl.	Name of Technology	Clients to which technology was commercialized	Date of signing MoU/License	Amount Received (INR)
1.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Sultan Salah, S/o Shri Rabban Saifi, R/o Gaddi Chowk, Brahampur, Budaun-243601, Uttar Pradesh	25.01.2025	9,900
2.	Supply of 2 weeks old chicks of CARIUTTAM™ (Japanese Quail)	The Superintendent, State Poultry Farm, Chak Ganjariya, Nilbait, Barabanki, Uttar Pradesh	11.04.2025	48,400
3.	Supply of adults of CHITAMBARİ	Shri Davinder Singh S/o Shri Jagjeet Singh, Bander Patti, Bhagibander, Bathinda, Bhagi Bander-151302, Punjab	22.04.2025	35,475
4.	Supply of adults of KADAMBARİ	Shri Davinder Singh S/o Shri Jagjeet Singh, Bander Patti, Bhagibander, Bathinda, Bhagi Bander-151302, Punjab	22.04.2025	35,475
5.	Supply of adults of SWETAMBARİ	Shri Davinder Singh S/o Shri Jagjeet Singh, Bander Patti, Bhagibander, Bathinda, Bhagi Bander-151302, Punjab	22.04.2025	23,650
6.	Supply of Fertile eggs of CHITAMBARİ	M/s S.R.S. Japanese Quail Products, SF No. 288, Post Genganaickenpalyam, Taluk Palldam, District Tirrpur-641667, Tamil Nadu	23.04.2025	13,200
7.	Supply of Fertile eggs of KADAMBARİ	M/s S.R.S. Japanese Quail Products, SF No. 288, Post Genganaickenpalyam, Taluk Palldam, District Tirrpur-641667, Tamil Nadu	23.04.2025	79,200
8.	Supply of Fertile eggs of SWETAMBARİ	M/s S.R.S. Japanese Quail Products, SF No. 288, Post Genganaickenpalyam, Taluk Palldam, District Tirrpur-641667, Tamil Nadu	23.04.2025	17,600
9.	Supply of DoCs of CSML	The Superintendent, State Poultry Farm, Chak Ganjariya, Nilbait, Barabanki, Uttar Pradesh	30.04.2025	17,600
10.	Supply of DoCs of CARILALIMA	The Superintendent, State Poultry Farm, Chak Ganjariya, Nilbait, Barabanki, Uttar Pradesh	30.04.2025	88,000
11.	Supply of 2 weeks old chicks of CARIUTTAM™ (Japanese Quail)	Shri Magan Rawat, S/o Shri Katan Rawat, 178 Talabpura, Villagr Talanpur, Uttar Pradesh	09.05.2025	23,760

12.	Supply of Fertile Eggs of CARIUTTAM™ (Japanese Quail)	Shri Umar Ali Gauhar, S/o Shri Parvez Hashmi, R/o 26 Shaikhani Street Upper Koti, Aligarh, Uttar Pradesh	14.05.2025	16,500
13.	Supply of Fertile eggs of CARILALIMA	Dr P.B. Nath, Assistant Director, State Poultry Farm, Gandhigram, Tripura	14.05.2025	99,000
14.	Supply of Fertile eggs of White Leghorn	Dr P.B. Nath, Assistant Director, State Poultry Farm, Gandhigram, Tripura	14.05.2025	99,000
15.	Supply of DoCs of CHITAMBARI	Mohd Hifan Ahmad S/o Mohd Sarwat Hussain, Bahjoi Road, Near Mullanan Masjid, Choudhary Sarai, Badayun darwaza, Sambhal, Uttar Pradesh	23.05.2025	4,620
16.	Supply of DoCs of SWETAMBARI	Mohd Hifan Ahmad S/o Mohd Sarwat Hussain, Bahjoi Road, Near Mullanan Masjid, Choudhary Sarai, Badayun darwaza, Sambhal, Uttar Pradesh	23.05.2025	4,620
17.	Supply of DoCs of KADAMBARI	Mohd Hifan Ahmad S/o Mohd Sarwat Hussain, Bahjoi Road, Near Mullanan Masjid, Choudhary Sarai, Badayun darwaza, Sambhal, Uttar Pradesh	23.05.2025	21,560
18.	Supply of DoCs of CARILALIMA	The Superintendent, State Poultry Farm, Chak Ganjariya, Nilbait, Barabanki, UP	03.06.2025	44,000
19.	Supply of DoCs of CSML	The Superintendent, State Poultry Farm, Chak Ganjariya, Nilbait, Barabanki, UP	03.06.2025	8,800
20.	Supply of 21–42-day old chicks of CARILALIMA	Shri Vikram Tomar, S/o Shri Ram Singh Tomar, R/o 533 bahawalpur, Ashirwad Chowk Sector-4, Dwarka, South West Delhi.	12.06.2025	34,650
21.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Rahul Srivastav S/o Shri Ravindra Swaroop, R/o 104, Krishna Nagar Road 7, Izatnagar, Bareilly, Uttar Pradesh-243122	19.06.2025	16,500
22.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Nazrul Imran S/o Shri Mohammad Yusuf, R/o 450 Bagh Brightan, Shamatganj Bareilly-243005, Uttar Pradesh	23.06.2025	16,500
23.	Supply of Adults of SWETAMBARI	Shri Jagjeet Singh, S/o Shri Chanan Singh, R/o Bhandar Patti, Bhagibandar, Bhatinda, Punjab-151302	04.07.2025	59,125
24.	Supply of DoCs of CSML	Shri Anoop Kumar Singh, S/o Shri Om Prakash R/o House No-463, Chak Kajehara Mohanlalganj Madhramau Kala, CANTT, Lucknow, Uttar Pradesh-226002	04.07.2025	16,500
25.	Supply of Fertile eggs of CSML	Shri Umar Ali Gauhar S/o Shri Parvez Hashmi, R/o 26 Shaikhani Street Upper Koti, Aligarh, Uttar Pradesh	16.07.2025	19,250
26.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Masood Ali Khan S/o Shri Masroor Ali Khan, R/o Flat No.-b/4, Nayyar Palace amir nisha, Koli, Aligarh, Uttar Pradesh	22.08.2025	13,200

27.	Supply of 7 Day old chicks of CARIUTTAM™ (Japanese Quail)	Mr Sayed Kausar Mehdi, S/o Mr Sayed Jafar Mehdi, R/o 203 Quila Kanghi tola, Bareilly, Uttar Pradesh	29.08.2025	13,860
28.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Moajjam Miyan, R/o H.No. 320, Village Dhokpuri tanda, Post Bhot Baqqal, Rampur, Uttar Pradesh.	21.10.2025	8,250
29.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Shah Jahan, S/o Shri Abid Khan, R/o Village LISADI Gajraula, Amroha, Uttar Pradesh	21.10.2025	3,300
30.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Rahul Srivastav S/o Shri Ravindra Swaroop R/o 104, Krishna nagar road 7, Izatnagar, Bareilly, Uttar Pradesh-243122	28.10.2025	9,900
31.	Supply of DoCs of CARIUTTAM™ (Japanese Quail)	Shri Jiya Ur Rahman S/o Shri Abdul Nabi, R/o Shishgarh, Dehat, Bareilly-243122, Sheeshgarh, Uttar Pradesh	04.11.2025	16,500

Technologies Assessed and Transferred: 02

Following technologies were transferred under formal Technology Licensing Agreement prepared by the ITMU.

Name of the technology	Clients	Date of signing of the License	License Fee (INR)
CARI MULTIGRAIN EGG BISCUITS	Shri Arpit Singh, S.o Shri Jasvir Singh, Bareilly	07-02-2025	11,800
CARI FUNCTIONAL CHICKEN SEEKH KABABS	Shri Sudeep Dayal, S/o Shri Shreekanth Prasad, Bihar	13-02-2025	11,240



TLA signed with Shri Arpit Singh, Bareilly, UP for CARI MULTI GRAIN EGG BISCUITS



TLA signed with Shri Sudeep Dayal, Bihar for the technology CARI FUNCTIONAL CHICKEN SEEKH KABABS

10. Workshops, Conferences and Trainings Organized

Programme	Duration	Participants	Course Director / Co-ordinators
Entrepreneurship Development Programmes			
Profitable Commercial Poultry farming	March 03-07	38	Dr Sandeep Saran Dr Jaydip Rokade
Comprehensive Commercial Poultry Farming	August 18-22	21	Dr Sandeep Saran Dr Jaydip Rokade Dr Geeta
Poultry Farming- Basic to Business	December 15-19	23	Dr Sandeep Saran Dr Jaydip Rokade Dr Geeta
Short-term training programmes			
Poultry production management (Hybrid)	April 21-25	49	Dr M.P.Sagar
Poultry production management (Hybrid)	August 04-08	45	Dr M.P.Sagar
Poultry production management (Hybrid)	December 01-05	48	Dr M.P.Sagar
Specialized Training Programmes			
Broiler Production	January 20-25	22	Dr. M.P. Sagar Dr JJ Rokade
Layer Production	February 10-15	17	Dr M.P. Sagar/ Dr Gautham Kolluri
Backyard Farming	September 22-27	17	Dr M.P. Sagar Dr JJ Rokade
Awareness cum Training Programmes under DAPSC			
On Campus Awareness-cum-Training Program on Goat	Jan-15-17	125	Dr J.S. Tyagi Dr Martin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	February 3	180	Dr J.S. Tyagi Dr Martin Ansari
Off-Campus Kukkut Mela and exhibition Awareness-Cum-Training Program at Gulariya Gaurishankar (Uprala), Majhgawan, Bareilly	March 8	515	Dr J.S. Tyagi Dr Sandeep Saran Dr Gautham Kolluri Dr. Martin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	April 26	60	Dr J.S. Tyagi Dr Sandeep Saran
On Campus Awareness-cum-Training Program on Backyard Poultry	June 17	70	Dr J.S. Tyagi Dr Martin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	July 1	105	Dr J.S. Tyagi Dr Sandeep Saran
On Campus Awareness-cum-Training Program on Backyard Poultry	July 7	30	Dr J.S. Tyagi Dr Sandeep Saran
On Campus Awareness-cum-Training Program on Backyard Poultry	July 11	127	Dr J.S. Tyagi Dr Sandeep Saran
On Campus Awareness-cum-Training Program on Backyard Poultry	August 7	130	Dr J.S. Tyagi Dr Martin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	August 14	30	Dr J.S. Tyagi Dr Martin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	August 29	86	Dr J.S. Tyagi Dr Gautham Kolluri

On Campus Kukkut Mela and exhibition Awareness-Cum-Training Program at Central Avian Research Institute, Izatnagar, Bareilly	November 2	886	Dr J.S. Tyagi Dr Sandeep Saran Dr Gautham Kolluri Dr. Matin Ansari
On Campus Awareness-cum-Training Program on Solar Panel	November 26	30	Dr J.S. Tyagi Dr Matin Ansari
On Campus Awareness-cum-Training Program on Pig farming	December 3	45	Dr J.S. Tyagi Dr Matin Ansari
On Campus Awareness-cum-Training Program on Backyard Poultry	December 23	125	Dr J.S. Tyagi Dr Matin Ansari
Awareness cum Training Programmes under DAPST			
On Campus training on backyard poultry farming	February 03	07	Dr Divya Dr Chandra Deo
Off-campus poultry entrepreneurship & awareness camp	February 12	65	Dr Divya Dr Chandra Deo
Off-campus poultry entrepreneurship & awareness camp	March 21.	72	Dr Divya Dr Chandra Deo
Off-campus poultry entrepreneurship & awareness camp	March 21	83	Dr Divya/ Dr Chandra Deo
Off-campus poultry entrepreneurship & awareness camp	March 21	65	Dr Divya Dr Chandra Deo
On-campus Training on Backyard poultry farming	April 15-16	30	Dr Divya Dr M.P.Sagar Dr Chandra Deo
On-campus Training on Backyard poultry farming	April 28-30	43	Dr Divya Dr M.P.Sagar Dr Chandra Deo
On-campus Training on Backyard farming	June 23-25	30	Dr Divya Dr M.P.Sagar Dr Chandra Deo
On-campus Training on Backyard farming	July 01-03	31	Dr Divya Dr M.P.Sagar Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship and Awareness camp	June 16	72	Dr Divya Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship and Awareness camp	June 16	73	Dr Divya Dr Chandra Deo
On-campus Training on Backyard poultry farming	July 01-03	31	Dr Divya Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship and Awareness camp	August 23	45	Dr Divya Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship and Awareness camp	September 12	42	Dr Divya Dr Chandra Deo
Off-Campus To organize an awareness camp and collect feed- back from the beneficiaries on the distributed birds.	October 03	56	Dr Divya Dr Chandra Deo
On-Campus one day poultry fair, exhibition & Awareness camp	November 02	100	Dr Divya Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship & Awareness camp	November 04	106	Dr Divya Dr Raj Naryan Dr M. P. Sagar

On-campus Training on Backyard farming	December 09-11	38	Dr Divya Dr M.P.Sagar Dr Chandra Deo
Off-Campus One day Poultry Entrepreneurship & Awareness camp	December 16	105	Dr Sandeep Saran Dr Jagbir Singh Tyagi
Externally Funded Programmes			
Backyard Farming (TSP) Sponsored by IARI, Jharkhand	January 8-10	25	Dr M.P. Sagar Dr Monika, M
Hands on Training in Avian Biotechnology: Advances, Impact and Prospects. Sponsored by AINP-GET, ICAR, New Delhi.	February 3-12	20	Dr Simmi Tomar Dr Rokade, J.J Dr Gautham Kolluri Dr Matin Ansari
Symposia VII (Advances in Poultry) Technical Session I (Frontiers of Sciences and Technology for Poultry Advancement) of Agricultural Science Congress-2025 at GBPUAT, Pantnagar	February 21	150	Dr A K Tiwari Dr Gautham Kolluri Dr Rokade J.J
National Workshop on Genome Editing for Enhancing Health and Welfare in Poultry Sponsored by AINP-GET, ICAR, New Delhi.	March 3-12	16	Dr Gautham Kolluri Dr Simmi Tomar Dr Rokade, J.J Dr Matin Ansari
Workshop on Applied Poultry Genomics and Transcriptomics: Unlocking the Molecular Keys to Avian Health and Productivity of PAG Asia 2025	March 18-20	85	Dr Simmi Tomar
International Training Workshop on PGCs Biobanking and Surrogate Technology for Conservation and Development of Chicken Genetic Resources	October 27-31	20	Dr Simmi Tomar
Backyard farming Sponsored by Aga Khan Foundation	November 17-20	20	Dr M.P. Sagar
Poultry farming Sponsored by ATMA Samastipur, Bihar	November 24-28	17	Dr M.P. Sagar



CARI Organized Symposia on "Advances In Poultry" during Agricultural Science Congress on 21.02.2025 at GBPUAT, Pantnagar.



Hands on Training in Avian Biotechnology: Advances, Impact and Prospects from February 03-12



National Workshop (AINP-GET) on "Genome Editing for Enhancing Health and Welfare in Poultry" from March 3-12, 2025



Participants of Backyard Poultry and Entrepreneurship Development Training



Participants gaining hands on experience during international training workshop on PGCs biobanking



Kukut mela under DAPSC, at Guladia Gaurishankar, Bareilly



International Training Workshop on PGCs Biobanking and Surrogate Technology for Conservation and Development of Chicken Genetic Resources from October 27-31, 2025.

(L to R): Dr. Olivier H. (ILRI Ethiopia), Dr. S. Tomar (Principal Scientist, ICAR-CARI), Dr. K.P. Singh (Vice Chancellor, MJPR University, Bareilly), Dr. R.P. Deka (Country Representative, ILRI-India), Dr. Mike McGrew (Principal Scientist, Edinburgh University, UK) and Dr Jabir Singh Tyagi (Director, ICAR-CARI, Izatnagar)



Dr Y.P.S. Mallik, Joint Director, IVRI-Mukteshwar addressing the participants of training during valedictory function on October 31, 2025.

11. Distinguished Visitors



A momentous group photograph marking the institutional visit of the Union Minister of Agriculture during the special convocational session.



Dr. M.L. Jat, Secretary, DARE & Director General, ICAR, New Delhi, and Dr. Raghavendra Bhatta, DDG (AS) ICAR, New Delhi visiting to ICAR-CARI



Dr. Sanjay Kumar, Chairperson, Agricultural Scientists Recruitment Board, New Delhi visiting to ICAR-CARI



Hon'ble Union Minister of Agriculture & Farmers Welfare and Rural Development, Shri Shivraj Singh Chouhan, visiting the specialized facilities at ICAR-CARI



Dr Shiv Prasad Kimothi Inaugurated the sale counter at ICAR-CARI



Dr M. L Jat, Secretary, DARE & DG, ICAR, New Delhi visiting to Demo shed, ICAR-CARI



IAEC Inspection of demonstration unit, ICAR-CARI



Dr Gyanendra Kumar Gaur, ADG, AP & B, and Shri Sunil Kumar Singh, Director Finance, ICAR, New Delhi, inaugurated the Dr B. Panda Training Complex.



Resource persons of international training ILRI, ICAR-CARI



Shri Sushil Kumar Singh, Director (Personnel), ICAR, visiting to Hatchery, ICAR-CARI



QRT visit to the Demo Shed



Dr Gyanendra Kumar Gaur, ADG, AP & B, ICAR, New Delhi, booklet released during the 47th Foundation Day of the Institute



Vice Chancellor GB Pant University of Agri. Technology, Pant Nagar, visiting to CARl

12. Approved on-Going Research Projects

Total Institute Projects – 15 Institutes + 1 AICRP + 4 Service + 10 Externally (Total 30 Projects)

Sl.	Project Code No.	Project Title	Principal Investigator	Co-Investigator
PROGRAMME-1: PRODUCTIVITY ENHANCEMENT OF SELECTED POULTRY SPECIES (15)				
Sub Programme – (i) Enhancement of productivity, reproductive efficiency and immune-competence of selected diversified poultry species along with development of improved package of practices. (15)				
1. 1.	P-1/2020/1- IAV/L10/6600 DOS: 28.10.2020 DOC: 27.10.2025	Genetic improvement of turkey for higher body weight	Dr. Simmi Tomar	Dr. Raj Narayan
2.	P-1/2022/1- IAV/L10/6510 DOS:01.04.2022 DOC:31.12.2025	Genetic improvement of three distinguished plumage and egg colours varieties of broiler and layer type domesticated Japanese Quails.	Dr Raj Narayan	Dr Jaydip Rokade
3.	P-1/2023/1- IAV/L30/6000 DOS:13.10.2023 DOC:12.10.2026	Non-antibiotic approaches to enhance host immunity, gut health and growth performance in poultry.	Dr. (Mrs) Divya	Dr. Chandra Deo Dr. Mohd. Matin Ansari Dr Gautham Kolluri
4.	No.CAU/COVSc- JLK/ICAR-NEH- COMP/2023- 24/1111 dated 28.02.2024 DOS:04.03.2024 DOC:31.03.2028	Evaluation of CARI improved germplasm in NEH region and its popularization under the aegis of ICAR-NEH scheme	Dr. Mohd. Matin Ansari	Dr Gautham Kolluri Dr Rokade JJ Dr Imtiwati Dr Bhabesh Mili
5.	P-1/2021/1- IAV/L34/3900/6100 DOS: 01.04.2021 DOC:31.03.2025 (extension as per IRC held on 28-30 May 2024)	Development of multi strain postbiotics as an effective alternative to antibiotics growth promoters and in vivo evaluation in broiler chicken under biotic and abiotic stress conditions	Dr. Jagbir Singh Tyagi	Dr. Gautham Kolluri Dr. Rokade J.J. Dr. Divya Dr. Mohd. Matin Ansari
6.	Service project	Quality assessment of feed stuffs and poultry feed	Dr. Chandra Deo	--
7.	Service Project	Monitoring of poultry diseases and implementation of bio-security measures including vaccination for achieving better survivability and productivity in CARI birds.	Dr. Gautham Kolluri	--
8.	Service Project	Production of DOCs of diversified poultry germplasm	Dr Jagbir Singh Tyagi	--

Sub Programme – (ii) Development of package of practices for rural poultry production system (2)

1.	Component – AICRP-PB, Hyderabad (w.e.f. 21.07.2018)	Improving the broiler parent lines and to develop the meat type crosses for rural poultry production	Dr Simmi Tomar	Dr. Jaydip J. Rokade
2.	P-1/2025/1-IAV/L50/6100 (add) DOS: 01.06.2025 DOC: 31.05.2028	Development of stabilized colored dual purpose improved chicken variety for rural poultry	Dr Jagbir Singh Tyagi	Dr Raj Narayan Dr Sandeep Saran Dr Gautham Kolluri Dr Md. Matin Ansari Dr Jaydip Rokade

PROGRAMME 2: CLIMATE RESILIENT POULTRY PRODUCTION SYSTEM AND WASTE MANAGEMENT (2)

Sub Programme – Impact assessment, adaptation evaluation and amelioration strategies to combat extremes of climate through genetic / molecular, nutritional, physiological, shelter management and evolving efficient technologies for utilization of poultry waste.

1.	P-1/2023/1-IAV/L50/6510 DOS:01.08.2023 DOC:31.07.2026	Effect of thermal conditioning of Japanese quail embryo on epigenetic changes induced postnatal thermo-tolerance.	Dr. Mohd. Matin Ansari	Dr Jagbir Singh Tyagi Dr Gautham Kolluri Dr Rokade J. J.
2.	P-1/2024/1-IAV/L50/6100 DOS:01.07.2024 DOC:30.06.2027	Identification of physiological and molecular signatures responsible for thermal resilience in chickens of different genetic backgrounds under changing climate scenario.	Dr Gautham Kolluri	Dr Jagbir Singh Tyagi Dr Mohd. Matin Ansari Dr Rokade J. J. Dr G.V.P.P.S. Ravi Kumar

PROGRAMME 3: VALUE ADDITION, FOOD SAFETY, QUALITY ASSURANCE AND PRODUCT DEVELOPMENT (3)

Sub Programme – Development of value added poultry feed and poultry products with functional attributes and quality assurance including product development.

1.	Service project	Development of different value added poultry products for income generation	Dr. Rokade J. J.	Dr Geeta (w.e.f. 10.10.2025)
2.	P-1/2023/1-IAV/L36/6100 DOS:01.09.2023 DOC:30.08.2026	Development of feeding package for CARINIRBHEEK and CARISHYAMA improved native chickens for optimum meat and eggs production	Dr. Chandra Deo	Dr. Divya Dr Avishek Dr. Jaydip J. Rokade
3	P-1/2025/1-IAV/L00/3910/6000 DOS: 01.09.2025 DOC: 31.08.2028	A one health approach to assess heavy metal and antibiotic residues in poultry production systems	Dr Geeta	Dr Jaydip Rokade Dr T.U. Singh Dr M. Suman Kumar

PROGRAMME 4: HRD, MARKET INTELLIGENCE AND TECHNOLOGY DISSEMINATION (5)

Sub Programme – (i) Market intelligence, contingency planning and economic implications of emerging issues in poultry value chain. (5)

1.	P-1/2022/1-IAV/C00/6000 DOS: 28.07.2022 DOC: 28.07.2025	Development of training modules and digital applications for transfer of poultry production technologies	Dr. M. P. Sagar	--
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2.	P-1/2023/1- IAV/L00/6100 DOS:01.08.2023 DOC:31.07.2026	Innovative strategies to reduce post-harvest losses to achieve better welfare of chicken	Dr. Rokade, J.J.	Dr A K Tiwari (Till 30.09.2025) Dr. Gautham Kolluri Dr Akhilesh Dr. Mohd. Matin Ansari
3.	P-1/2024/1- IAV/E10/6000 DOS: 1.11.2024 DOC: 31.7.2027	Assessing economic impact of selected CARI technologies and services	Dr Sandeep Saran	Dr Jaydip Rokade Dr Divya
Sub Programme – (ii) Skill development, capacity building for different stakeholders and transfer of technology. (2)				
1.	P-1/2024/1- IAV/E00/6000 DOS: 01.04.2024 DOC: 31.03.2029 DAPST Project	Socio-economic empowerment of tribal through intervention of poultry and other technologies	Dr Divya	Dr. Sandeep Saran Dr. Chandra Deo Dr. Jagbir Singh Tyagi Dr. Raj Narayan Dr. M. P. Sagar Dr. Monika M. Dr. Shilpi Kerketta
2.	P-1/2024/1- IAV/E30/6000 DOS: 01.07.2024 DOC: 01.07.2028 DAPSC Project	Entrepreneurship opportunities and skill development for self-sustainable livelihood and nutritional security for socially privileged groups (Scheduled Caste)	Dr. Jagbir Singh Tyagi	Dr. Sandeep Saran Dr.Gautham kolluri Dr. Rokade J.J. Dr.(Mrs) Divya Dr. Mohd. Matin Ansari
<i>*The project was approved for three years in principle, however initially for one year, and next two year subject to availability of grant from the Council.</i>				

EXTERNALLY FUNDED PROJECTS (10)

Sl.	Sanction order No.	Title of the project	Name of PI	Name of Co-PI
1.	No. IP&TM-7(5)/2013-IPR dated 1.1.2016 (ABI Project); extended vide F.No.1(1)/2023- PIM dated 29.03.2023 DOS: 01.01.2016 DOC: 31.03.2026	Poultry Entrepreneurship Development Initiative – The Agri Business Incubator	Dr Sandeep Saran	Dr. Jagbir Singh Dr J.J. Rokade (w.e.f. 08.01.2024)
2.	No.A. Extn. -20-3/2011-AE. I dated 28.10.16 DOS: 28.10.2016 DOC:31.03.2026 (extended vide F.No.1(1)/2023- PIM dated 29.03.2023)	Enhancing livelihood security of farming community through livestock and crop integration using proven technologies	Dr. Jagbir Singh (CCPI)	--
3.	Collaborative project with NDRI, Karnal as Lead Centre (DST Project)	Development of climate resilient and sustainable agri-based systems for better food, feed nutritional and livelihood security	Dr Jagbir Singh Tyagi (CCPI)	Dr Sandeep Saran Dr Gautham Kolluri

	DOS: 01.04.2022 DOC: 31.03.2025	options to farming community of cold arid regions-Ladakh		
4.	No. CRG/2021/007904 dated 06.01.2022 (DBT Project) DOS: 21.01.2022 DOC: 20.01.2025	Transgenic chicken for expression of Leukemia Inhibitory Factor (LIF): A potential cytokine in stem cell biology and therapy.	Dr Gautham Kolluri	--
5.	F.No. IP&TM-7(1)/2017-IPR dated 02.01.2018 extended vide F.No.1(1)/2023-PIM dated 29.03.2023 DOS: 02.01.2018 DOC: 31.03.2026	Institute technology Management Project-National Agriculture Innovation Fund (NAIF)-Component-1	Dr Sandeep Saran	Dr Jagbir Singh Tyagi Dr Jaydip Rokade
6.	Ref: email dated 8.12.2022 from Dr H. Rehman, Regional Representative for South Asia, ILRI, Pusa, New Delhi-12 No. CARI/2023/ILRI Project DOS: 01.01.2023 DOC: 31.12.2026	Pangenome analysis and identification of selection signatures for conservation of Red Jungle fowl	Dr Simmi Tomar (CCPI)	Dr A. K. Tiwari (Till 30.09.2025) Dr J. J. Rokade
7.	F.No. R-300121 I 12022-DADF-Dept-Part (I) (E- 22977) dated 17 Jan 2024 (NLM Project) DOS: 19.01.2024 DOC: 18.01.2027	Development of True Breeding Improved Native Chicken with Higher Productivity for Backyard Poultry Production	Dr Jaydip Rokade	Dr Raj Narayan Dr Gautham Kolluri Dr Mohd Matin Ansari Dr Chandrahas
8.	Collaborative project with ICAR-NISHAD, Bhopal (NPGET Project) DOS: 09.05.2024 DOC: 31.03.2026	Development of gene edited chicken with enhanced resilience to avian influenza (H5N1)	Dr Gautham Kolluri	Dr Simmi Tomar Dr Mohd Matin Ansari
9.	Collaborative project with ICAR-DPR, Hyderabad (NPGET Project) DOS: 09.05.2024 DOC: 31.03.2026	Production of broiler livestock and poultry using CRISPR technology	Dr Simmi Tomar	Dr Mohd Matin Ansari Dr Gautham Kolluri
10.	Contract Research Project with M/s Envi India, Mumbai DOS: 08.04.2025 DOC: 31.12.2026	Evaluating the efficacy of diverse range of chemicals in mitigating house fly and bed bug infestation under commercial layer settings.	Dr Gautham Kolluri	Dr J.S. Tyagi Dr Sandeep Saran Dr Mohd Matin Ansari Dr J. J. Rokade

13. Important Activities and Services

Quinquennial Review Team (QRT) Meeting

- The first meeting of the QRT was held on 28.08.2025 in physical mode. The proceedings were prepared and submitted to the Chairman, QRT. The same was included in the final draft of QRT report.
- The second meeting of QRT was held online on 12.11.2025 to discuss and finalize the QRT Report.
- The final meeting was held on 05.12.2025 for reviewing the changes suggested and for giving finishing touches to the Report.
- Dr. Sandeep Saran served as Member Secretary, QRT constituted by the Council vide F. No.AS/2/01/2024-ASR dated 28.10.2024.



18th Research Advisory Committee (RAC) Meeting

The RAC meeting was held on May 05, 2025, under the chairmanship of Dr. V. Ravinder Reddy, Vice Chancellor of PV Narasimha Rao Telangana Veterinary University, Hyderabad. Dr. G.K. Gaur, ADG (AP&B), ICAR, New Delhi; Dr. Ashok Kumar Tiwari, Director, CARI, Izatnagar; Dr. S.K. Bhanja, former Joint Director, Extension Education, IVRI, Izatnagar; Dr. P.K. Shukla, Professor and Head, Poultry Science, DUVASU, Mathura; Dr. A. Kundu, Professor, Veterinary Science, RPCAU, Pusa, Samastipur, Bihar; Dr. MV Joshi, Former Dean of PGIVAS, Akola, Maharashtra; Mr. Shashank Bhatia, Bahedi and Mr K.P. Singh, Meerut, both Progressive Farmers and Nominees of Hon'ble Minister, Ministry of Agriculture and Farmers' Welfare attended the meeting as esteemed members of RAC. The meeting began with opening remarks from the chairman, followed by Dr. Sandeep Saran presented the Action Taken Report (ATR) on the recommendations from the 17th RAC meeting. Subsequently, research highlights were presented division-wise by the respective Heads of Division/Section. The meeting concluded with a vote of thanks by RAC nodal Dr. Matin Ansari, Scientist (SS).



Institute Research Committee (IRC) Meetings

- The meeting was held during May 08-09, 2025, under the chairmanship of Dr. A.K. Tiwari, Director. The proceedings of IRC were prepared and circulated on 23.05.2025. Records of all the presentations were maintained in the PME Section. Dr. Sandeep Saran served as Secretary, IRC for the reporting period 2024-25.
- In addition, the mid-term Institute Research Committee (IRC 2025-26) meeting of the Institute was held on December 30, 2025, in the Committee Room of the Institute under the chairmanship of Dr. Jagbir Singh Tyagi, Director (A), CARI Izatnagar. Dr. Sandeep Saran, Head PME, conducted the meeting as Secretary IRC, which was attended by all the scientists of the Institute.



Institute Management Committee (IMC) Meeting

The 53rd Institute Management Committee meetings were held on Sep. 05th, 2025, in the Committee Room, Administrative Block, New Campus of the Institute under the Chairmanship of Dr. Ashok Kumar Tiwari, Director, CARI, Izatnagar. Dr Sandeep Saran presented the salient achievements of the Institute. The following were present in the meeting.

Participants of Institute management committee (IMC) meeting

Sl. No.	Name	Designation
1.	The Director, CARI, Izatnagar.	Chairman
2.	The Assistant Director General (AP&B), ICAR, New Delhi	Member
3.	The Hon'ble Vice Chancellor, G.B. Pant University of Agriculture & Tech., Pantnagar, Uttam Singh Nagar, Uttarakhand 263145	Member
4.	Dr. S.K. Singh, Joint Director (R) ICAR-IVRI, Izatnagar	Member
5.	Dr. L.C. Chaudhary, Principal Scientist, ICAR-IVRI, Izatnagar	Member
6.	The Additional Director, Animal Husbandry, AH Department, Bareilly	Member
7.	Dr. M.R. Reddy, Principal Scientist, DPR, Hyderabad	Member
8.	Dr. Arbind Kumar Chaudhary, Principal Scientist (Plant Breeding), Division of Crop Research, ICAR, Research Complex for Eastern Region, Patna – 800014 (Bihar)	Member
9.	Dr. Sandeep Saran, I/c HD/PME & Member Secretary QRT, CARI, Izatnagar	Special Invitee
10.	Shri Kailash Chand, Finance & Account Officer, CARI, Izatnagar.	Special Invitee
11.	Administrative Officer, CARI, Izatnagar.	Member Secretary



Institute Animal Ethics Committee (IAEC) Meeting

A meeting of the IAEC was held at ICAR-CARI, Izatnagar, on July 31, 2025, in which Dr. Ashok Kumar Tiwari (Chairperson); Dr. Deba Brata Mondal (main nominee); Dr. Kamal Kishore (socially aware nominee); Dr. Rajul Saxena (scientist outside the Institute); Dr. Gautham Kolluri (member from the Institute); and Dr. Mohd Matin Ansari (member secretary) participated. The committee discussed, scrutinized, and approved the proposals (Form B), and inspected the Institute's Poultry House facility.



Right to Information (RTI)

Dr. Sandeep Saran, Nodal Officer, RTI & CPIO (Scientific Matters), and Shri D.K. Sapra, AO & CPIO (Administrative Matters), disposed of RTI requests. A total of four applications were received under the Right to Information (RTI) Act, and all were responded to promptly in accordance with the provisions of the Act. Detailed information under section 4 of the RTI Act 2005 pertaining to Voluntary Disclosure of Information was compiled and uploaded to the website.

Feed Storage & Processing Unit

The main activity of the section includes procurement and storage of different feed ingredients, feed formulation, quality control, and ensuring balanced feeds for valuable germplasm of layers, broilers, guinea fowls, quails, and turkeys maintained under different Divisions/Sections of the Institute as well as research projects involving poultry at IVRI. During the period under report, the feed unit manufactured and supplied 12,298.65 quintals of different types of poultry feed.

Detailed break-up of feed supplied to different Divisions/Sections/Farms

S. No.	Project / Division / Organization	Total Quantity (Qtls)
1.	Broiler farm	2534.00
2.	Layer farm	2734.90
3.	Desi fowl farm	2586.50
4.	Quail farm	933.50
5.	Guinea fowl unit	1332.50
6.	Turkey unit	893.10
7.	Avian Nutrition and Feed Technology Division	23.15
8.	Avian Physiology and Reproduction Division	297.00
9.	Avian Biotechnology	3.50
10.	P H T Division	12.40
11.	Demo shed	159.70
12.	IVRI, Izatnagar	109.10
13.	IVRI, Mukteshwer	170.00
14.	Moringa project	224.00
15.	DAPSC Project	159.05
16.	TSP Project	67.75
17.	DUVASU, Mathura	36.00
18.	IIT Kanpur	2.50
19.	AICRP-CARI	14.00
20.	ICAR-IARI Pusa	6.00
Total		12298.65

Revenue generation through sale of feed

Organization	Revenue Generated
IVRI, Izatnagar	Rs. 4,29,304.00
IVRI, Mukteshwer	Rs. 5,52,500.00
DUVASU, Mathura	Rs. 1,72,800.00
ICAR-IARI Pusa	Rs. 24,900.00
IIT Kanpur	Rs. 10,188.00
Total	Rs. 11,89,692.00

Agricultural Knowledge Management Unit (AKMU)

The AKMU managed the local area network of about 70 nodes operational in the Institute and assisted staff in troubleshooting computer systems and the network. NKN connectivity was extended and maintained in the new campus including the CCTV system. A new website to be hosted on the ERNET India server is under construction under the registered domain 'cari.res.in'. Social media platforms (Facebook page CARI1979, Instagram, Twitter, and YouTube) were also maintained to respond to visitors' queries.

Marketing Center
Net revenue generated from the sale of experiment byproduct

Month	Chicken eggs	Quail eggs	chicken meat	Kadaknath meat	Guinea fowl meat	Quail meat	Turkey meat	Products
Jan-25	479940	164450	114965	1800	18150	51950	22140	11283
Feb-25	356540	45780	60458	600	34638	27750	0	7030
Mar-25	273500	33240	142500	1575	5412	15480	3600	10418
Apr-25	278550	28800	100437	600	3780	26400	1620	4600
May-25	299740	32580	144280	1950	16440	7600	900	4845
Jun-25	300550	19000	125690	450	5310	24400	0	3990
Jul-25	342400	25400	70821	1050	19080	21600	123570	6214
Aug-25	441950	28860	100541.22	1650	0	39200	5265	7620
Sep-25	352975	42450	35250	0	5520	15200	540	2340
Oct-25	626540	44200	71870	1200	3684	13200	0	2300
Nov-25	591380	95675	124165	0	120	44500	1890	27790
Dec-25	850180	68525	209098	0	1890	111200	8190	21036
Total:	5194245	628960	1300075.22	10875	114024	398480	167715	109466

Germplasm Cell
Details of Germplasm Supply for January to December 2025

Details of Germplasm Supply								Live Sale (Kg)	Total Amt.
Months	Desi	Layer	Broiler	Quail	Turkey	Guinea Fowl	Total		
January	740	9784	-	1361	-	54	11939	4810	₹ 57.00 Lakh
February	3587	4941	25	125	-	-	8678		
March	5623	9696	5200	-	8	23	20550		
April	210	2156	5028	1100	100	5515	14109		
May	6306	8088	3564	2040	324	529	20851		
June	6521	1675	3550	2500	345	2714	17305		
July	5093	5558	2138	51	1162	2245	16247		
August	845	5588	100	1203	22	680	8438		
September	1115	4133	400	-	100	-	5748		
October	1143	1243	1613	1400	50	50	5499		
November	567	-	150	1000	-	6	1723		
December	5696	4699	5177	460	20	-	16052		
Total	37446	57561	26945	11240	2131	11816	147139	4810 Kg	

Library and Information Services

- The Institute Library continued to strengthen its information resources and services by expanding its collection and enhancing access to both print and digital resources.
- To facilitate better access to electronic information resources, Wi-Fi connectivity was provided within the library premises, enabling users to browse the internet and access online resources through their personal laptops and other electronic devices.
- In addition to its core functions, the library provides auxiliary services, including photocopying, email access, CD copying and document scanning.

PME Activities

The PME section served as a central hub for providing information on various research, training, and extension activities of the Institute to various government, semi-government, public sector units, and private agencies besides serving as a coordinating link between the Institute and Council (ICAR). Dr. Sandeep Saran, Principal Scientist and Head, PME Section, reviewed and scrutinized research projects/proposals and maintained all RPPs of completed and ongoing projects in physical and digital formats. A total of 96 reports were compiled and submitted regularly to the Council.

Table: Reports compiled and submitted to the Council

S. No.	Report / Title	Frequency
1.	Cabinet Report	Monthly
2.	NEST Report	Monthly
3.	Rationalization of Compliances Report	Monthly
4.	PMO Information Report	Monthly
5.	One Team One Task Achievements Report	Monthly
6.	Output Outcome Monitoring Framework Report	Quarterly
7.	Cabinet Report	Quarterly
8.	DAPSC Achievements Report	Quarterly
9.	DAPST Achievements Report	Quarterly
10.	NEH Achievements Report	Quarterly
11.	Reforms Implementation Report	Monthly
12.	Participation of Women Report	Quarterly

ISO Certifications

The Institute has acquired ISO 9001:2015, ISO 14001:2015, and ISO 22000:2018 certifications from a QMS-approved certifying agency. Dr. Sandeep Saran served as Management Representative to obtain these ISO certifications.

हिन्दी अनुभाग (Hindi Section)

राजभाषा कार्यावन्त्यन समिति की बैठकों का आयोजन

समीक्षाधीन अवधि के दौरान राजभाषा हिन्दी के प्रयोग की प्रगति की समीक्षा के लिए संस्थान में दिनांक 11-02-2025, 06-05-2025, 12-08-2025 तथा 17-12-2025 को राजभाषा कार्यावन्त्यन समिति की बैठकें आयोजित की गईं। उक्त बैठकों के दौरान राजभाषा नीति तथा नियमों के अनुपालन के लिए चर्चा के उपरान्त उनके अनुपालन पर बल दिया गया। राजभाषा व प्रयोग से संबंधित तिमाही प्रगति रिपोर्ट तैयार कर भारतीय कृषि अनुसंधान परिषद मुख्यालय सहित भारत सरकार के राजभाषा विभाग को भेजी गईं। संस्थान के अधिकारियों तथा कर्मचारियों के राजभाषा ज्ञान संबंधी विवरण को अद्यतन किया गया तथा प्रवीणता प्राप्त अधिकारियों तथा कर्मचारियों को हिन्दी काम करने के लिए व्यक्तिशः आदेश जारी किए गए।

कार्यशाला का आयोजन

समीक्षाधीन अवधि के दौरान संस्थान में राजभाषा हिन्दी को बढ़ावा देने के लिए वर्ष में नियमनुसार संस्थान में दिनांक 27-02-2025, 23-06-2025, 05-09-2025 तथा 19-12-2025 को हिन्दी कार्यशालाओं का आयोजन किया गया, जिसमें राजभाषा अधिनियम तथा राजभाषा नियमों के संबंध में जानकारी दी गई और कुल 52 अधिकारियों तथा 34 कर्मचारियों को प्रशिक्षित किया गया। इसके अतिरिक्त राजभाषा अधिनियम राजभाषा तथा नियमों के अनुपालन के लिये अनेक परिपत्र तथा निर्देश जारी किए गए।

हिन्दी पखवाड़ा का आयोजन

संस्थान में 14-29 सितम्बर, 2025 तक हिन्दी पखवाड़ा का आयोजन किया गया। इस अवसर पर संस्थान के निदेशक डॉ. अशोक कुमार तिवारी ने माँ सरस्वती के चित्र पर माल्यार्पण तथा दीप प्रज्वलित कर कार्यक्रम का उद्घाटन करते हुए कहा कि हिन्दी का प्रयोग केवल प्रशासनिक कार्यों में ही नहीं हो रहा है बल्कि वैज्ञानिकों द्वारा हिन्दी में लिखे गए शोध-पत्रों, व्याख्यानो, प्रशिक्षणों एवं प्रकाशनों के माध्यम से संस्थान की नवीन प्रौद्योगिकीय उपलब्धियों को जन-जन तक पहुँचाने के लिए भी हिन्दी प्रयोग किया जा रहा है।

हिन्दी पखवाड़ा के दौरान संस्थान में निबंध लेखन, वाद-विवाद, कम्प्यूटर पर हिन्दी टंकण, टिप्पणी तथा मसौदा लेखन, सामान्य ज्ञान, अनुवाद तथा शब्दावली परिचय प्रतियोगिताओं का आयोजन किया गया। संस्थान में पिछले बारह वर्षों से हिन्दी में शोध-पत्र लेखन प्रतियोगिता का आयोजन किया जा रहा है। समीक्षाधीन वर्ष में भी हिन्दी में शोध-पत्र लेखन प्रतियोगिता का आयोजन किया गया, जिसमें मूल रूप से हिन्दी में लिखे गए कुल 05 शोध-पत्र प्राप्त हुए,

जिनमें से 03 शोध-पत्रों को नगद पुरस्कार तथा शेष को सांत्वना पुरस्कार प्रदान किया गया। कार्यक्रम के अन्त में डॉ. अशोक कुमार तिवारी, निदेशक के.प.अ.सं. ने पुरस्कार विजेताओं को पुरस्कार तथा स्मृति चिह्न प्रदान किए। कार्यक्रम का आयोजन हिन्दी अनुभाग के राकेश जैसवारा, प्रभारी अधिकारी तथा प्रधान वैज्ञानिक डॉ. दिव्या द्वारा किया गया।



Engineering and Maintenance Section

The Engineering and Maintenance Section completed over 152 diverse tasks, including immediate repairs and replacement of fixtures such as wash basins, sinks, waste pipes, PVC connections, G.I. pipes, valves, cocks, door closers, handles, mesh, and plaster works in various laboratories, experimental farms, and residential complexes.

- Key infrastructure projects executed in coordination with CPWD
- Providing and installation of a stainless-steel gate for the Poultry experimental farm and sale counter.
- Waterproofing treatment of the training hostel-cum-guest house.
- Exterior renovation of Type 5 quarters.
- Repair and renovation of Desi Shed no. 22 and the brooder shed.
- Repair and renovation of the fresh meat technology lab.
- Cleaning of overhead tanks.
- Renovation of the corridors of PME and TT Sections (dismantling old wooden structures to liberate space for better ventilation and natural light).
- Whitewashing of Dr. B. Panda Training Complex and transformed the one ground-floor wing into guest rooms and VIP suites.
- Inauguration of newly constructed Labour Rest Room in the New Campus



Electrical Section & Instrumentation Section

The Electrical Section and Instrumentation Section of the institute carried out a large number (836) of diversified electrical jobs, such as immediate repair and replacement of burnt/damaged wires, cables, main switches, and tube lights in various laboratories and experimental farms.

- Repair and rewinding jobs: Exhaust Fans (4), ceiling fans (12), single-phase motor 2.0HP (1), three-phase motors (1), window ACs (14), split ACs (14), refrigerators (4), deep freezer (1).
- Maintenance of glow sign boards, armored cable work of old campus, farm & new campus side, and repair of water bath centrifuge, -20°C and -80°C fridges, stabilizers, etc.
- Resolved 520 written complaints and 265 oral maintenance complaints.
- Key jobs: Electrical work of Training-cum-Guest House; supply and installation of a submersible pump at Broiler Farm Shed No. 07.

International Yoga Day

The 10th International Yoga Day was celebrated on June 21, 2025 in the Institute in the premises of CARI New Campus. The theme for the International Day of Yoga 2025 was "Yoga for One Earth, One Health". Students, scientists, technical, administrative, skilled staff and contractual staff members actively participated in the Yoga Day celebration. Dr Amitab Mishra and Sh. Ramesh Chand Pant were expert for this event.



Institute Foundation Day

The Institute celebrated its 47th Foundation Day on Nov. 2, 2025. Dr. Rajbir Singh, DDG (Agriculture Extension), ICAR, New Delhi was the Chief Guest, and Dr. G.K. Gaur, ADG (AP&B) and Dr. Anil Kumar Dixit, ADG (PIM), ICAR, New Delhi were the Guests of Honour. The Mega Poultry Fair organized on the occasion was inaugurated by Dr. G.K. Gaur. In the fair, a total of 40 stalls by various startups, firms, and state departments associated with poultry and allied businesses, agriculture, and animal husbandry participated.



The Institute showcased its improved germplasm of various poultry species in the fair, which was witnessed by about 800 visitors including poultry farmers, women folk, students, scientists, and entrepreneurs.



A Poultry Farmers Meet (Kukkut Krishak Sangoshti) was also organized to address the issues and concerns of poultry farmers.

The occasion also marked the distribution of chicks, poultry housing units (poultry huts), and Bukhari heaters to the beneficiaries selected under the Scheduled Caste Sub-Plan (SCSP).

Technology for "CARI Whole Egg Drink" and "CARI Egg Albumin Drink", a booklet entitled "Quail Farming", the Hindi journal "राजभाषा स्मारिका 2025", and a booklet entitled "Quail Development: From Blastoderm to Fully Formed Chick" were also released.



Swachhta Campaigns at the Institute

Swachhta Pakhwara (16th–31st December 2025)

The institute initiated the campaign under the direction of ICAR by displaying banners and taking the Swachhta Pledge administered by Dr. Jagbir Singh Tyagi. Employees were urged to keep the campus clean, neat, and green.





- **Swachhta Awareness Day (17-12-2025):** Celebrated on the theme 'Conversion of Waste into Wealth'. A hybrid lecture on 'How to convert poultry waste into wealth' was delivered by Dr. Chandrahas, Dean, COVAS, Kisanganj (Bihar), focusing on recycling poultry farming waste for environmental benefits.
- **Awareness Camp (21-12-2025):** Conducted at MGMG village panchayat Dandia, Bareilly district. Dr. M. P. Sagar, Principal Scientist, delivered lectures on village sanitation and personal hygiene, followed by a local cleaning drive.



- **Kisan Divas (23-12-2025):** Organized to commemorate the birthday of former Prime Minister Late Sh. Choudhary Charan Singh. Approximately 125 farmers and farm women participated. They were briefed on backyard/desi poultry farming and the Viksit Bharat-Gram G Act 2025.



- **Swachhta Quiz (24-12-2025):** Organized at Government Junior School, Hafizganj, Bareilly to motivate children towards cleanliness, with prizes awarded to winners.



- **Signature Campaign:** Conducted in Kunwar pur Banjariya village to promote hygiene awareness, where villagers signed a poster of the Swachhta Pledge.
- **Swachhta Rally & Plantation (20-12-2025):** A plantation drive was held in the new campus led by Dr. Jagbir Singh Tyagi and Dr. Jyoti Ploth, Professor, GBPUA&T, Pantnagar.



Swachhta Hi Seva Programme (Swachhotsav)

Swachhotsav was organized from 15th September to 2nd October 2025. The Swachhta Pledge was administered online by Hon'ble Dr. M. L. Jat, DG ICAR, and led at the Institute by Dr. Sandeep Saran. Under the 'Ek Ped Maa Ke Naam' campaign, tree transplantation was carried out. Cleaning drives were targeted at chronic accumulation zones (black spots), such as the dumping place behind the old administrative block (Dr. B. Panda Training Complex). A Swachhta Pathshala and Quiz were conducted at Primary Pathshala, Dandia on 19-09-2026. A Preventive Health Checkup Camp for Safai Mitras was conducted on 21-09-2025 at Manav Hospital, IVRI by Dr. Amitabh Mishra, Sr. Medical Officer (Retd).



Swachhta Divas (2nd October 2025)

To celebrate Gandhi Jayanti and remember Sh. Lal Bahadur Shastri, Dr. Jagbir Singh Tyagi, Director, along with staff members, offered floral tributes. The Director also felicitated and honored the Safai Mitras (sanitation workers) for their exemplary contributions. After that cleaning activities were performed along the roadsides of the New Campus.



Games and Sports

Twenty-one employees from various categories participated in the ICAR Zonal Sports Tournament (North Zone) 2024, organized by ICAR-NDRI from 2-5 February 2025 at Karnal. Besides, several friendly cricket matches were organized between Institute Staff and Poultry Science Students.



World Egg Day

World Egg Day-2025 was celebrated on 10 October 2025 under the theme "The Mighty Egg: Packed with Natural Nutrition". On this occasion, the institute organized various competitions for the students of ICAR-Central Avian Research Institute (CARI) and ICAR-Indian Veterinary Research Institute (IVRI). The activities included Egg Painting, Rangoli, and Debate competitions, in which students from different academic levels of CARI and IVRI participated. As a part of the celebration, an awareness programme on the nutritive value of eggs in human health was also conducted for primary school children at the IVRI campus, aiming to sensitize young students about the importance of eggs as a nutritious and affordable food.



World IP Day Celebration

The Institute organized the World IP Quiz Competition on April 29, 2025, under the aegis of the Institute Technology Management Unit to celebrate World IP Day.



Flagship Programmes of Govt of India

- **Rashtriya Ekta Divas:** Institute celebrated Rashtriya Ekta Divas (31st October 2025): on the 150th birth anniversary of Sardar Vallabhbhai Patel. Dr. Jagbir Singh Tyagi highlighted his monumental contribution to uniting India. The staff took the Ekta Divas Pledge.
- **Constitution Day:** Celebration (26th November 2025) was celebrated: During this occasion the Constitution Pledge was taken by all categories of staff led by Dr. Jagbir Singh Tyagi, Director CARI, at the new campus.



- **Kisan Samman Nidhi Programme:** Webcast of 21st Kisan Samman Nidhi (19-11-2025): The live release of the 21st installment by Hon'ble Prime Minister Sh. Narendra Modi was screened, 100 farmers from nearby villages attended this program.
- **PM Dhan Dhanya Krishi Yojna evam Dalhan Atmnirbharta Mission:** Webcast (11 Oct 2025): Screened and attended by approximately 85 local farmers.

Visits of Students

Students from various junior and higher secondary schools and inter-colleges visited the campus for scientific orientation, practical exposure, and knowledge sharing regarding poultry science and farming.

Inputs on Draft Prevention of Cruelty to Animals (Amendment) Bill, 2025

Committee members Dr. Mohd. Matin Ansari and Dr. Geeta formulated and provided official institutional inputs on the draft note for the Prevention of Cruelty to Animals (Amendment) Bill, 2025.

Republic Day Celebration

ICAR-CARI, Izatnagar celebrated the 76th Republic Day. Dr. Ashok Kumar Tiwari, Director, ICAR-Central Avian Research Institute, unfurled the National Flag and addressed the staff, highlighting the significance of the Constitution and achievements of the institute from February 2025 to August 2025. Scientists, technical officers, administrative personnel, supporting staff, and other employees of the institute participated in the celebration.



Independence Day Celebrations

ICAR-CARI, Izatnagar celebrated the 79th Independence Day with great enthusiasm and patriotic fervour. Dr. Ashok Kumar Tiwari, Director of the ICAR-Central Avian Research Institute, hoisted the National Flag in the presence of institute staff and officials. The ceremony commenced with the unfurling of the National Flag, followed by the singing of the National Anthem.

On the occasion, the Director CARI delivered an Independence Day address, highlighting the importance of national unity, dedication, and collective efforts towards the progress of the nation and highlighted the institute achievements from September 2025 to January 2026. All the staff of the institute participated in the celebration.



Cultural activities

CARI Ladies Club Activities: The CARI Ladies Club, comprising women scientists and the spouses of scientists and officers of CARI, organized regular recreational and welfare activities under the chairpersonship of Dr. Sangeeta Tiwari (up to September 2025) and Smt. Anuradha Tyagi (from October 2025 onwards). During the year, the Club conducted ten monthly meetings at CARI, Izatnagar, celebrated the Teej Festival on 26 July 2025 with Dr. Isha Sharma, Psychologist, Military Hospital, Bareilly, as the Chief Guest, and organized a New Year celebration for CARI families with various recreational activities. As part of its welfare initiatives, blankets were distributed to the students of Saraswati Foundation Charitable School, Bareilly by Smt. Anuradha Tyagi along with Club members. All activities were successfully coordinated by Smt. Gyaneshwari, Secretary, with the support of Smt. Ranjana, Treasurer.



Teej Celebration



Holi celebration



A musical night (Tarangini), Master Kaushtubh Pathak performance



A musical night (Tarangini) students' performance

Viksit Krishi Sankalp Abhiyan (Kharif)

was launched by the Indian Council of Agricultural Research in collaboration with the Ministry of Agriculture and Farmers' Welfare as a nationwide outreach campaign under the vision of Viksit Bharat @2047. The campaign was organized from 29 May to 12 June 2025 with the objective of strengthening the linkage between agricultural research institutions and farmers by ensuring the last-mile delivery of proven technologies before the Kharif cropping season. Scientists from ICAR institutes, State Agricultural

Universities (SAUs), Krishi Vigyan Kendras (KVKs), State Departments of Agriculture, and other stakeholders jointly participated in the campaign to promote climate-resilient, sustainable, and location-specific agricultural technologies.

The Vikshit Krishi Sankalp Abhiyan (Kharif Season) was organized by institute from 29th May to 12th June, 2025 in coordination with Department of Agril, Pilibhit and KVK, Pilibhit (UP). During this period, the scientists, technical and supporting staff of the institute reached to 135 villages of five blocks of Pilibhit district and held meetings with 14663 farmers and women. The institute created awareness about poultry farming among the farmers. The scientists of the institute interacted with farmers and get acquainted with problems faced by farming community. Based on feedback received from farmers during these interactive meetings, some researchable issues were found out and included in research plan of the institute.

- Total nine teams of scientists were formed.
- Each team conducted three activities at three different locations daily in coordination with KVK and Department of Agril, Pilibhit.
- All teams covered 135 villages of 7 Development Blocks during the VKSA programme.

Major Issues in Poultry Farming for VKSA Document

1. Unstable characters of poultry breeds (Crosses) while natural hatching of eggs by farmers their own while regenerating flock for backyard poultry farming.
2. High feed cost
3. Lack of awareness about poultry farming among rural masses.
4. Low productivity of desi breeds of poultry and availability of chicks of high productivity.

Road Map for the Issues

1. Development of desi crosses with stable characters for at least two generation (research is going on).
2. High feed cost and ways and means to reduce the same
3. Backyard poultry is a source of additional income and nutritional security for women but they are unaware with its strength. They can be made aware about scientific backyard poultry farming through awareness camps as this

institute done during VKSA Kharif season. The institute is already reaching to womenfolk under their DAPSC and DAPST schemes.

4. Availability of Desi breeds with 150-200 eggs annual production are lacking due to multiplier centres in rural area. The high yielding breeds parent stocks are available with the institute, there only need to open up mother units for multiplying the germ plasm.



Block	Male	Female	Total
Marori	1417	570	1987
Lalaurikheda	1191	581	1772
Amariya	1750	910	2660
Bisalpur	1633	453	2086
Bilsanda	1069	411	1480
Barkhera	1660	649	2309
Puranpur	1710	659	2369
Total	10430	4233	14663



CERTIFICATE

ICAR-CENTRAL AVIAN RESEARCH INSTITUTE

IZATNAGAR, BAREILLY-243122,, UTTAR PRADESH, INDIA

This certificate verifies that the above Organisation has been audited on the above address for scope as under and found to be in accordance with the requirements of Management System

ISO 9001:2015

Quality Management System

SCOPE

"Research and Development for Diversified Poultry Production including Extension, Education and Training"

Certificate No.: 2025439

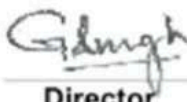
Date of Initial Registration	: 12 February 2025
Date of this certificate	: 12 February 2025
Surveillance audit on or before	: 11 February 2026
Recertification Due/Certificate Expiry	: 11 February 2028

This Certificate is valid as per Rules and Regulations of ESCPL & also the surveillance audits conducted atleast once a year.
After successfully completion of annual Surveillance Audit, Continuation letter will be issued.
To check the certification validity please contact - info@escpl.com

For verification and updated information concerning the present certificate visit to www.escpl.com
This Certificate is the property of Equalitas Systemcert Private Limited and shall be returned immediately when demanded.

EQUALITAS SYSTEMCERT PRIVATE LIMITED
Head Office : B-73, Lekhraj Gold Complex, Sector -16, Munshipulla, Indira Nagar, Lucknow-226016
Registered Office : A-19, Ground Floor, Okhla Phase-2, FIEE Complex, Kartar Tower, New Delhi-110020
+91-730-372-3334 • www.escpl.com • info@escpl.com

EF-00N, Rev. 02



Director







Certificate of Registration

This is to certify that

ICAR-CENTRAL AVIAN RESEARCH INSTITUTE

IZZATNAGAR- 243122, BAREILLY U.P. INDIA

has been independently assessed by IAB accreditation and is compliance with the requirement of the standard

ISO 14001:2015

Environment Management System

For the following scope of activities

RESEARCH AND DEVELOPMENT FOR DIVERSIFIED POULTRY PRODUCTION INCLUDING EXTENSION, EDUCATION, AND TRAINING

Certificate Number: US-ICIE-25-13255242

To verify this certificate please visit at www.uscertifications.uk

Date of Certification	13 TH MAR 2025
Issuance Date	13 TH MAR 2025
1st Surveillance Due	12 TH MAR 2026
2nd Surveillance Due	12 TH MAR 2027
Re-Certificate Due	12 TH MAR 2028




Authorized Signatory



CAB Address : Merry Terrace Woking, London FU21 3EH UK Validity of this certificate is subject to annual surveillance audits to be done successfully This certificate is the property of U.S. Certification and shall be returned immediately on request U.S. Certification is an independent Systems Products and Personal assessment Body, U.S. Certification is a accredited by IABCERT.US



Certificate of Registration

This is to certify that

ICAR-CENTRAL AVIAN RESEARCH INSTITUTE

IZZATNAGAR- 243122, BAREILLY U.P. INDIA

has been independently assessed by IAB accreditation and is compliance with the requirement of the standard

ISO 22000:2018 **Food Safety Management System** For the following scope of activities

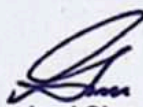
**RESEARCH AND DEVELOPMENT FOR DIVERSIFIED POULTRY
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14. Personalia

DIRECTOR	
Dr Ashok Kumar Tiwari (w.e.f 30.09.25)	
Dr Jagbir Singh Tyagi (w.e.f 01.10.25)	

Head of Division/Section	
Division of Avian Genetics and Breeding	Dr Raj Narayan
Division of Avian Nutrition and Feed Technology	Dr Chandra Deo
Division of Avian Physiology and Reproduction	Dr Jagbir Singh Tyagi
Division of Post-Harvest Technology	Dr Rokade, J.J
Poultry Housing and Management Section	Dr Jagbir Singh Tyagi
Technology Transfer Section	Dr M.P. Sagar
Avian Medicine Section	Dr Gautham Kolluri
Prioritization, Monitoring and Evaluation Section	Dr Sandeep Saran
Poultry Economics and Agribusiness Research Section	Dr Sandeep Saran
Post-Graduate Education and Training Section	Dr Chandra Deo
ABI Centre	Dr Sandeep Saran
Institute Technology Management Unit	Dr Sandeep Saran

Farm/Unit-Coordinator/In-charges/Manager		
Farm/Unit	Coordinator/ In-charges	Manager
Desi Fowl Unit	Dr Raj Narayan	Sh. Rakesh Jaiswara
Experimental Layer Farm		Sh. Pradeep Kumar
Experimental Broiler Farm		Sh. Arun Kumar
Experimental Turkey Unit		Sh. S.R. Meena
Experimental Guinea Fowl Unit		Sh. Arun Kumar
Experimental Quail Farm		Sh. S.R. Meena
Girigram Takniki Park		Dr Mohd. Matin Ansari
Feed mill and Processing Unit	Dr Chandra Deo	-
Experimental Hatchery Unit	Dr Jagbir Singh Tyagi	-

Units	Coordinator/In-charges
Library	Dr Jagbir Singh Tyagi / Shri Jaideep Arora
AKMU	Dr Sandeep Saran / Shri Jaideep Arora
Poultry Processing Plant and Marketing Center	Dr Rokade, J. J
Electrical and Instrumentation	Dr Jagbir Singh Tyagi / Shri Kapil Kumar Sharma
Civil Engineering and Maintenance	Dr Jagbir Singh Tyagi / Shri Shatyapal Sharma
Estate Section	Dr Jagbir Singh Tyagi / Shri Shatyapal Sharma
Games and Sports	Dr Jagbir Singh Tyagi / Dr Matin Ansari (Secretary)

Nodal Officers	
MIS-FMS and RTI-MIS	Dr Gautham Kolluri
Vigilance Officer	Dr Gautham Kolluri
Institutional Biosafety Committee (IBSC)	Dr Gautham Kolluri
Aadhaar Enabled Biometric Attendance System	Dr Gautham Kolluri
Institute Animal Ethics Committee (IAEC)	Dr Mohd. Matin Ansari
RTI and CPIO (Scientific Matters)	Dr Sandeep Saran
CPIO (Administrative Matters)	Shri L. B. Gujar (upto 28.02.2025)
Centralized Public Grievance Redress and Monitoring System	Dr Rokade, J. J
Krishi Portal	Dr Gautham Kolluri
HRD	Dr Mohd. Matin Ansari
NEH	Dr Mohd. Matin Ansari
iGOT Karmayogi	Dr Mohd. Matin Ansari

Scientific staff (as on 31.12.2025)		
Name	Designation	Education & Qualification
Dr A.K. Tiwari	Director (Up to 30.09.2025)	Ph.D
Dr Jagbir Singh Tyagi	Director (w.e.f. 01.10.2025)	Ph. D
Dr Sandeep Saran	Principal Scientist	Ph. D
Dr Raj Narayan	Principal Scientist	Ph. D
Dr Chandra Deo	Principal Scientist	Ph. D
Dr M.P. Sagar	Principal Scientist	Ph. D
Dr (Mrs.) Simmi Tomar	Principal Scientist	Ph. D
Dr (Mrs.) Divya	Principal Scientist	Ph. D
Dr Chandahas (On deputation)	Principal Scientist	Ph. D
Dr Rokade Jaydip Jaywant	Scientist (Senior Scale)	Ph. D
Dr Gautham Kolluri	Scientist (Senior Scale)	Ph. D
Dr Matin Ansari	Scientist (Senior Scale)	Ph. D
Dr. (Mrs.) Geeta (Transferred from ICAR- MGIFRI, Motihari & joined at ICAR- CARI, Izatnagar on 23.06.2025)	Scientist	Ph. D
Dr. Manzoor Ahmad Wani (Joined at ICAR- CARI, Izatnagar on 27.10.2025)	Scientist	Ph. D

Technical staff		
Name	Designation	Education & Qualification
Shri Satya Ram Meena	Chief Technical Officer (T-9)	M.Sc. (Ag.)
Shri Kundan Kumar	Assistant Chief Technical Officer (T-7-8)	B.Sc. (Ag.)
Shri Kapil Kumar Sharma	Senior Technical Officer (T-6)	M.A. (Sociology)
Shri Arun Kumar	Senior Technical Officer (T-6)	M.A. (Economics)
Shri Jaideep Arora	Technical Officer (T-5)	M.Sc. (Bio Chemistry)
Shri Arvind Kumar	Technical Officer (T-5)	10th
Shri Rakesh Jaiswara	Technical Officer (T-5)	M.Sc. (Bio-technology)
Shri Shatya Pal Sharma	Sr. Technical Assistant (T-4)	B. Tech. (Civil)
Shri Pradeep Kumar	Technical Assistant (T-3)	M.Sc. (Zoology)

Administrative staff			
Name	Designation	Name	Designation
Shri Deleep Kumar Sapra	Administrative Officer	Ms. Muskan Transferred to ICAR-CIPHET, Ludhiana on 29.08.2025	Assistant
Shri Kailash Chand	Sr. Finance & Account Officer	Shri Ajay Kumar	UDC
Shri Rupesh Kumar Pathak	Assistant Administrative Officer	Shri Vijai Kumar Gupta	UDC
Shri Lalit Prakash	Pvt. Secretary	Shri Umesh Kumar Tripathi	UDC
Shri Akshay Dahiya Transferred to ICAR-IARI, New Delhi on 12.11.2025	Assistant	Ms. Divya Saxena	LDC

Skilled Supporting Staff		
Name	Name	Name
Shri Ahsan Ali Khan	Shri Akeel Mohammad	Smt. Asha Devi
Shri Bhole Singh	Shri Bhubaneswar Prasad	Shri Bot Singh
Shri Dhaneswar Kumar Bharti	Shri Dilip Singh	Shri Harish Chandra
Shri Jitendra Kumar Verma	Shri Jugendra Pal Singh	Shri Klimuddin
Shri Kolvin	Shri Krishan Kumar	Smt. Maya Anaria
Shri Narayan Singh	Shri Narendra Singh Basera	Shri Nazir Ahmad
Shri Om Prakash	Shri Preetam Lal	Shri Raj Pal
Shri Rajan Kumar	Shri Rajveer Singh	Shri Ramesh Chandra Kandpal
Shri Samiuddin	Shri Samiuddin	Smt. Seema George
Shri Surjan Singh	Shri Sushil Singh	Shri Ved Prakash Sagar
Shri Veer Kumar	Shri Vijay Shanker	Shri Vinod D. Singh
Shri Zakir Ali	Smt. Saroj	Smt. Sunita

Cadre strength as on 31.12.2025			
Category	Sanctioned Strength	In-Position	Vacant
Scientific	22+1	13	09+01
Assistant Director (OL)	01	00	01
Technical	50	09	41
Administrative	17	08	09
Supporting Staff	82	36	46

Promotions/Appointments		
Name	Designation details	Promoted w.e.f. / Appointed on
Smt. Reeta Adhikari	Assistant Administrative Officer	01.01.2025
Shri Satya Ram Meena	Chief Technical Officer	21.02.2024
Shri Vijai Kumar Gupta	UDC	01.01.2025
Shri Arun Kumar	Sr. Technical Officer	27.07.2024
Shri Arvind Kumar	Technical Officer	04.10.2024
Shri Kailash Chand	Sr. Finance & Account Officer	25.02.2025
Shri Kundan Kumar	Assistant Chief Technical Officer	22.05.2024
Shri Umesh Kumar Tripathi	UDC	25.04.2025
Dr. J.J. Rokade	Sr. Scientist	01.07.2023
Dr. Gautham Kolluri	Sr. Scientist	01.01.2024
Dr. Manzoor Ahmad Wani	Scientist	27.10.2025

MACP		
Name of Employee	Due Date of MACP	Date of MACP
Shri Vijai Kumar Gupta	12.12.2020	22.08.2025
Shri Umesh Kumar Tripathi	08.12.2020	22.08.2025
Shri Pappu	18.01.2023	09.10.2025
Shri Ghasi Ram	04.07.2022	09.10.2025

Superannuations		
Name	Designation	Date
Smt. Reeta Adhikari	Assistant Administrative Officer	31.01.2025
Shri Ravindra Kumar Pohan	Skilled Supporting Staff	31.01.2025
Shri Pappu	Skilled Supporting Staff	31.01.2025
Shri Ghasi Ram	Skilled Supporting Staff	31.01.2025
Shri Lal Bahadur Gujer	Administrative Officer	28.02.2025
Shri Ram Murti Lal	Skilled Supporting Staff	30.06.2025
Shri Ravi Narayan Lal	Skilled Supporting Staff	31.07.2025
Shri Abdulla Khan	Skilled Supporting Staff	31.07.2025
Shri Rish Pal Singh Rana	Skilled Supporting Staff	31.08.2025
Shri Gulam Masih	Skilled Supporting Staff	31.08.2025
Dr. Ashok Kumar Tiwari	Director	30.09.2025
Dr. Raj Narayan	Principal Scientist	31.12.2025



Farewell function of Dr. A.K. Tiwari, Director on 30.09.2026



Farewell function of Dr. Raj Narayan, Principal Scientist on 31.12.2025

15. Expenditure and Revenue

(Rs. In Lakhs)

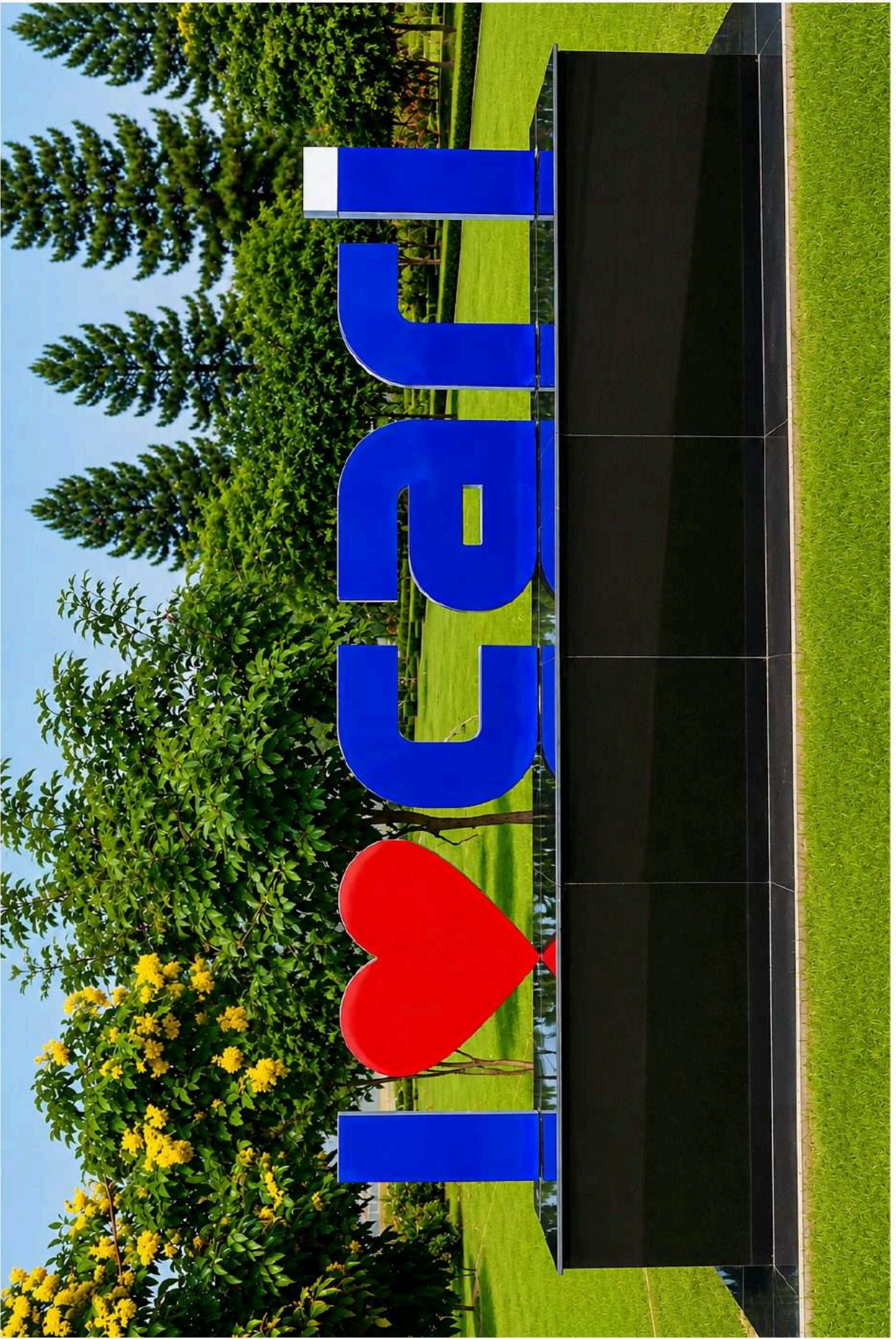
S. No.	Head of Account	Budget Allocation	Utilization
1.	Grant in Aid- Capital		
A.	Land	0.00	0.00
B.	Buildings	0.00	0.00
	Office Buildings	65.10	65.10
	Residential Buildings	0.00	0.00
	Minor works	0.00	0.00
	Other Capital Expenditure		
C.	Equipment	82.82	82.82
D.	Information Technology	2.40	2.40
E.	Library Books & Journals	0.00	0.00
F.	Vehicles, Vessels	0.00	0.00
G.	Livestock	0.00	0.00
H.	Furniture & Fixtures	9.33	9.33
I.	Others	0	0
	Total G-I-A Capital	159.65	159.65
2.	Grant-in-aid Salary		
A.	Establishment expenses	1072.62	1072.62
B.	Wages	0.00	0.00
C.	Overtime Allowances	0.00	0.00
	Total Establishment Expenses	1072.62	1072.62
3.	Grant-in-aid General		
	Pension & Other Retirement Benefits	426.25	426.25
4.	Travelling Allowances		
i)	Domestic TA/Transfer TA	7.14	7.14
ii)	Foreign TA	0.00	0.00
	Total Travelling Expenses	7.14	7.14
5.	Research and Operational Expenses		
1)	Research Expenses	280.11	280.11
2)	Operational Expenses	164.79	164.79
	Total - Research, Operational	444.90	444.90
6.	Administrative Expenses		
A.	Infrastructure	164.09	164.09
B.	Communication	2.24	2.24
C.	R/M- Equip, vehicle etc.	9.78	9.78
D.	Office Buildings	23.74	23.74
E.	Residential Buildings	3.27	3.27
F.	Minor works	0.00	0.00
G.	Others (excluding TA)	231.88	231.88
	Total Administrative Expenses	435.00	435.00

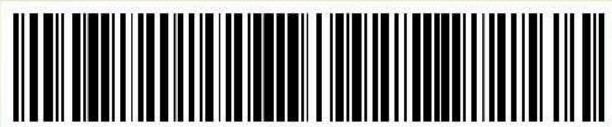
7.	Miscellaneous Expenses		
A.	HRD	4.21	4.21
B.	Other items Fellowships, Scholarship, etc	0.00	0.00
C.	Publicity & Exhibition	0.00	0.00
D.	Guest House- Maintenance	4.43	4.43
E.	Other miscellaneous	0.00	0.00
	Total miscellaneous expenses	8.64	8.64
	Total Grants in Aid -General	1321.93	1321.93
	Grand Total – Capital + Revenue (Salaries + General)	2554.20	2554.20
	Loans, Advances	25.00	24.72

(Note-Including NEH, TSP & SCSP Schemes)

Revenue generation

S. No.	Head of Account	Amount
1	Sale of Farm Produce	11,27,972
2	Sale of Fish & Poultry	1,43,90,292
3	Sale of Land	0
4	Sale of Building	0
5	Sale of Vehicle, other Machine tools	0
6	Sale of Livestock	0
7	Sale of Publication and advertisement	15,900
8	Licence Fee	6,90,251
9	Interest earned on loans & advances	4,19,964
10	Leave salary and pension contribution	17,70,634
11	Receipts from schemes	0
12	Analytical and testing fee	45,050
13	Pre-shipment fee	0
14	Application fee from candidates	0
15	Diploma Charges	0
16	Receipts from services rendered	0
17	Unspent balance of Grants of previous years	2,47,998
18	Interest earned on short term deposits	0
19	Income generated from Internal Resource Generation schemes	
a)	Training	5,34,480
b)	Consultancy	0
c)	Contract Research	9,96,255
d)	Sale of Technology	0
e)	other (Specify the source)	0
20	Net Profit in Revolving funds	0
21	Recoveries of Loans & Advances	7,33,838
22	Miscellaneous Receipts	13,79,095
	Total: Other Receipts	2,23,51,729





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भाकृअनुप-केन्द्रीय पक्षी अनुसंधान संस्थान
इज्जतनगर - 243122, बरेली (उ.प्र.) भारत
ICAR-CENTRAL AVIAN RESEARCH INSTITUTE
IZATNAGAR- 243122 (UP) INDIA