



वार्षिक प्रतिवेदन Annual Report 2025



भाकृअनुप—महात्मा गाँधी समेकित कृषि अनुसंधान संस्थान
ICAR-Mahatma Gandhi Integrated Farming Research Institute
Piprakothi, Motihari, Bihar, India

वार्षिक प्रतिवेदन

Annual Report- 2025



भारतीय कृषि अनुसंधान परिषद
Indian Council of Agricultural Research
महात्मा गाँधी समेकित कृषि अनुसंधान संस्थान
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Preface



It is with great pleasure and pride that I present the Annual report of ICAR- Mahatma Gandhi Integrated Farming Research Institute (MGIFRI), Motihari, Bihar for the year 2025. The institute is playing crucial role in improving the agricultural activities of small and marginal farmers by managing flood-prone and waterlogged ecosystem of Eastern India. Waterlogging and recurrent flooding remain among the most critical challenges affecting agriculture and rural livelihoods in Eastern India. Available estimates indicate that nearly 11.6 million hectares of land in India are affected by perennial or seasonal waterlogging. In Eastern India, particularly in Bihar, the problem is aggravated by riverine floods, cyclonic rainfall, flash floods, and poor drainage conditions. Every year, nearly 0.8 million hectares of land in Bihar experience varying degrees of flooding and water stagnation due to transboundary rivers originating from the Himalayas and Nepal, including the Gandak, Burhi Gandak, Bagmati, Koshi, and Kamla-Balan river systems. These recurring hydro-climatic stresses pose serious threats to agricultural sustainability, food security, and farmers' livelihoods.

ICAR-MGIFRI is committed to developing resilient, resource-efficient, and climate-smart farming solutions for flood-prone and waterlogged ecosystems by working on integrated farming systems, water management technologies, resilient crop and livestock production systems, eco-friendly disease management, mechanization for waterlogged situations, and livelihood diversification approaches to transform flood-affected regions into productive and profitable agricultural landscapes.

This year, the institute operated 9 institute funded project, concluded 8 institute projects, 3 ICAR funded projects/ scheme (FFP, SCSP and NEH) through the dedicated team of scientists, researchers, and support staff to work diligently towards this goal, achieving significant milestones that align with our vision of a sustainable agricultural future. The institute implements on-station and on-farm research, capacity-building programs, and farmer-centric initiatives through ICAR's Farmers' FIRST Project, the SCSP scheme and NEH scheme. Through dedicated scientific innovation and technological convergence, we have successfully developed Integrated Farming System (IFS) models through integrating e.g., fish (IMC), goat (Black Bengal), Fish with goat/ cattle/ buffalo/ duck/ poultry/ horticultural crops, modified lowland area and converted horti-based IFS models etc for water congested ecologies that directly uplift small and marginal farmers of Bihar, Eastern India. We have also placed a strong emphasis on training, demonstrations, awareness campaigns, Kisan Gosthi, Krishi Mela, and Field Days which strengthened the institute's outreach and technology dissemination. Information Technology and social media-based extension services through WhatsApp, Facebook, YouTube, Twitter was strengthened which helped to reach stakeholders across India.

I gratefully acknowledge the guidance and continuous support of Hon'ble Secretary, DARE and Director General, ICAR, Dr. M. L. Jat; Hon'ble Deputy Director General (NRM); Dr. A.K. Nayak; Dr. A. Velmurugan, ADG (Soil & Water Management), Dr. Rakesh Kumar, ADG (A, AF & CC), ICAR, New Delhi; and other officials of the Council. I also extend sincere thanks to the Chairman and Members of the Research Advisory Committee (RAC), Institute Management Committee (IMC), Institute Research Council (IRC), various institutional committees, and the Publication Committee for their valuable contributions in preparing the Annual Report 2025 of the institute.

Date: 10 May, 2026
Motihari, Bihar



(Raghavendra Singh)
Director

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कार्यकारी EXECUTIVE सारांश SUMMARY

1

उत्तरी बिहार के जल-जमाव वाले पारिस्थितिकी तंत्र में महत्वपूर्ण फसलों के प्रमुख कीटों और रोगों का पर्यावरण-अनुकूल प्रबंधन

खेती के दौरान फसलों पर कई तरह के जैविक तनाव (biotic stresses) आते हैं। इसलिए, हमने बिहार के बाढ़-प्रभावित दो जिलों - दरभंगा और मुजफ्फरपुर - में एक विस्तृत सर्वे किया है। मुख्य फसलों को नुकसान पहुँचाने वाले कीड़ों और बीमारियों पर किए गए इस शुरुआती सर्वे से पता चलता है कि इलाके की नमी वाली जलवायु, उपजाऊ जलोढ़ मिट्टी और बार-बार आने वाली बाढ़ के कारण किसानों को गंभीर चुनौतियों का सामना करना पड़ता है। फील्ड में किए गए परीक्षणों से पता चला है कि फूलगोभी, बैंगन और भिंडी की बढ़त और पैदावार को बेहतर बनाने के लिए 'दशपर्णी अर्क' एक असरदार जैविक इनपुट है। इसलिए, फूलगोभी, बैंगन और भिंडी की खेती में रासायनिक निवेश के पर्यावरण-अनुकूल और टिकाऊ विकल्प के तौर पर 'दशपर्णी अर्क' (10%) के प्रयोग की सलाह दी जा सकती है।

Ecofriendly management of major insect pest and diseases of important crops in water congested ecosystem of North-Bihar

Many biotic stresses invade the crops during cultivation. Hence, we have conducted an extensive survey in two flood prone districts of Bihar, i.e Darbhanga and Muzaffarpur. The baseline survey on insect pests and diseases of major crops highlights the serious challenges faced by farmers due to the region's humid climate, fertile alluvial soil, and frequent flooding. The field evaluation indicated that Dashaparni Ark is an effective organic input for improving growth and yield parameters in cauliflower, brinjal and bhindi. Hence, Dashaparni Ark (10%) can be recommended as an eco-friendly and sustainable alternative to chemical inputs in cauliflower, brinjal and bhindi cultivation.

2

पूर्वी भारत के बाढ़-प्रभावित क्षेत्रों के लिए मौजूदा कृषि प्रणालियाँ और इष्टतम योजना

पूर्वी भारत के बाढ़-प्रभावित इलाकों में खेती के तरीकों पर चल रही परियोजना के तहत, बिहार के पूर्वी चंपारण ज़िले में सीमांत, छोटे और बड़े किसानों के बीच धान की खेती की लागत का अध्ययन किया गया। अध्ययन से पता चला कि खेती की लागत में मजदूरी का हिस्सा सबसे ज्यादा था, और उसके बाद मशीन से होने वाला काम, सिंचाई, गोबर की खाद और रासायनिक उर्वरकों का नंबर आता है। सीमांत किसानों के परिवारों के अधिकांश सदस्य अपनी आजीविका के लिए मजदूरी पर निर्भर थे। जबकि बड़े किसान किराए पर लिए गए मजदूरों और मशीनों के इस्तेमाल पर ज्यादा निर्भर थे। धान की खेती सभी तरह के किसानों के लिए फ़ायदेमंद पाई गई, जिसमें बड़े किसानों को तुलनात्मक रूप से ज्यादा पैदावार, कुल आय और शुद्ध मुनाफ़ा मिला। श्रम उपयोग विश्लेषण से यह भी स्पष्ट हुआ कि धान की खेती के विभिन्न कृषि कार्यों में पुरुष एवं महिला दोनों श्रमिकों का महत्वपूर्ण योगदान रहा।

Existing Farming Systems and Optimal Plan for Flood-Prone Areas of Eastern India

Cost of cultivation of paddy was carried out among marginal, small, and large farmers in East Champaran district of Bihar under the project on farming systems in flood-prone ecosystems of Eastern India. The study revealed that labour constituted the major share of cultivation cost, followed by machine labour, irrigation, farmyard manure, and fertilizers. Marginal farmers depended more on family labour, whereas large farmers relied more on hired labour and machine use. Paddy cultivation was found profitable across all farm categories, with large farmers recording comparatively higher yield, gross income, and net returns. Labour utilization analysis further highlighted the important contribution of both male and female labour across different farm operations in paddy cultivation.

3

बिहार के पूर्वी चंपारण जिले में बैकयार्ड कुक्कुट पालन प्रणाली के अंतर्गत पाले गए कुक्कुटों का अवरोध विश्लेषण एवं प्रदर्शन मूल्यांकन।

बिहार के पूर्वी चंपारण में ग्रामीण कुक्कुट पालन में घर के पिछवाड़े में मुर्गी पालन (बैकयार्ड पोल्ट्री) का सिस्टम सबसे मुख्य है। 6 उपमंडल और 27 प्रखंड में 600 लोगों पर किए गए एक सर्वे में पाया गया कि 55.8% परिवारों में 6 तक सदस्य थे, और 54.16% पुरुष थे। कुक्कुट से सालाना कमाई कम थी: 59.66% ने ₹5,000 से कम कमाए, 28.16% ने ₹5,000-10,000 कमाए, और सिर्फ 12.16% ने ₹10,000 से ज्यादा कमाए। मुख्य चुनौतियों में वैज्ञानिक जानकारी की कमी, ज्यादा मृत्यु दर, निम्न गुणवत्ता वाली नस्ल, शिकारियों के हमले और चारे की ज्यादा कीमत शामिल थीं। फील्ड में किए गए प्रयोगों में तीन ग्रुप की जांच की गई: नियंत्रण समूह, प्रशिक्षण के साथ स्थानीय पक्षी, और ट्रेनिंग के साथ बेहतर नस्ल के वनराजा पक्षी। कंट्रोल ग्रुप में मृत्यु दर 12.2% थी, जबकि ट्रेनिंग वाले ग्रुप में यह 23.1% और 19.37% थी। वनराजा पक्षियों का वजन पहली बार अंडे देने और साइकिल खत्म होने पर काफी ज्यादा था, जो बेहतर नस्ल और क्षमता निर्माण के साथ बेहतर परिणाम को दिखाता है।

Constraint analysis and performance evaluation of poultry birds reared under backyard system in East Champaran district of Bihar

Backyard poultry production system dominates rural poultry farming in East Champaran, Bihar. A survey of 600 respondents across 6 subdivisions and 27 blocks found 55.8% families had up to 6 members, with 54.16% male respondents. Annual poultry income was low: 59.66% earned <₹5,000, 28.16% earned ₹5,000-10,000, and only 12.16% >₹10,000. Major constraints included lack of scientific knowledge, high mortality, poor germplasm, predator attacks, and high feed cost. Field interventions tested three groups: control, local birds with training, and improved Vanraja with training. Mortality was lower in trained groups at 23.1% and 19.37% vs 12.2% control. Vanraja birds showed significantly higher body weight at first lay and cycle end, indicating better performance with improved germplasm and capacity building.

4

उत्तरी बिहार की परिस्थितियों में धान-गेहूं फसल प्रणाली में प्राकृतिक खेती का मूल्यांकन

धान-गेहूं की फसल प्रणाली में 8 अलग-अलग तरीकों से प्राकृतिक खेती का एक प्रयोग किया गया। इसमें पारंपरिक रासायनिक खेती, गोबर की खाद का इस्तेमाल करके जैविक खेती, 50% रासायनिक खाद और 50% गोबर की खाद वाली सेमी-पारंपरिक खेती, और प्राकृतिक खेती के पांच तरीके शामिल थे। प्राकृतिक खेती के तरीकों में बीज के उपचार के लिए एक बार बीजामृत का इस्तेमाल किया गया और खड़ी फसल के दौरान 1, 3, 5, 7 या 9 बार जीवामृत का इस्तेमाल किया गया। रबी के मौसम में, गेहूं की किस्म HD 2967 की पैदावार इस प्रकार रही: पारंपरिक खेती में 1066 किग्रा/हेक्टेयर, जैविक खेती में 1082 किग्रा/हेक्टेयर¹, और सेमी-पारंपरिक खेती में 937 किग्रा/हेक्टेयर¹। 7 और 9 बार जीवामृत के इस्तेमाल वाली प्राकृतिक खेती से क्रमशः 768 और 802 किग्रा/हेक्टेयर¹ पैदावार मिली, जो रासायनिक और जैविक प्रणालियों के बराबर थी। प्राकृतिक खेती के अन्य तरीकों से 515-605 किग्रा/हेक्टेयर¹ पैदावार मिली। खरीफ के मौसम में, धान की किस्म MTU7029 की पैदावार इस प्रकार रही: पारंपरिक खेती में 3198 किग्रा/हेक्टेयर¹, जैविक खेती में 2242 किग्रा/हेक्टेयर¹, और सेमी-पारंपरिक खेती में 3184 किग्रा/हेक्टेयर¹। प्राकृतिक खेती में पैदावार 962-1100 किग्रा/हेक्टेयर¹ के बीच रही। प्राकृतिक खेती में जैविक पैदावार और हार्वेस्ट इंडेक्स (फसल कटाई सूचकांक) काफी कम (19.5-21.3%) थे, जबकि अन्य प्रणालियों में ये 41-45% थे। धान की फसल की अवधि 127 दिन थी।

Assessment of natural farming in rice-wheat cropping system in North Bihar conditions

A natural farming experiment was conducted in a rice-wheat cropping system with 8 treatments. Conventional chemical farming, organic farming using farmyard manure, semi-conventional farming with 50% chemical fertilizer + 50% farmyard manure, and five natural farming treatments using Bijamrita once for seed treatment plus Jeevamrit applied 1, 3, 5, 7, or 9 times during the standing crop. In Rabi, wheat variety HD 2967 yielded: conventional 1066 kg/ha⁻¹, organic 1082 kg/ha⁻¹, semi-conventional 937 kg/ha⁻¹. Natural farming with 7 and 9 Jeevamrit applications gave 768 and 802 kg/ha⁻¹, comparable to chemical and organic systems. Other natural farming treatments yielded 515-605 kg/ha⁻¹. In Kharif, paddy variety MTU7029 yielded: conventional 3198 kg/ha⁻¹, organic 2242 kg/ha⁻¹, semi-conventional 3184 kg/ha⁻¹. Natural farming yields ranged 962-1100 kg/ha⁻¹. Biological yield and harvest index were much lower under natural farming at 19.5-21.3% versus 41-45% for other systems. Paddy crop duration was 127 days.

5 उत्तर बिहार के बाढ़ प्रभावित क्षेत्रों में सतत संसाधन प्रबंधन के लिए आम-आधारित आईएफएस मॉडल का विकास और मूल्यांकन

पूर्वी चंपारण, बिहार में बकरी पालन, कुक्कुट पालन, अंतरफसल एवं पोषक तत्व पुनर्चक्रण को एकीकृत करते हुए 1 एकड़ क्षेत्रफल पर स्थान-विशिष्ट आम आधारित एकीकृत कृषि प्रणाली (IFS) मॉडल विकसित किया जा रहा है। 10 प्रखंडों के 40 से अधिक बागानों के सर्वेक्षण द्वारा कल्याणपुर प्रखंड में उपयुक्त स्थलों का चयन किया गया। प्रारंभिक मृदा विश्लेषण में क्षारीय pH (6.89–8.54), कम EC (0.21–0.27 dS m⁻¹) तथा कम कार्बनिक कार्बन (0.25–0.61%) पाया गया। कम लागत वाले बकरी एवं कुक्कुट शेड के साथ हल्दी, अदरक एवं गिनी घास जैसी अंतरफसलें स्थापित की गईं। एकीकृत पुनर्चक्रण से 3,100 किग्रा से अधिक कम्पोस्ट/खाद तथा ₹95,664 शुद्ध आय प्राप्त हुई।

Development and assessment of mango-based IFS model for sustainable resource management in flood prone areas of North Bihar

A location-specific mango-based Integrated Farming System (IFS) comprising of goat rearing, poultry, intercrops, and nutrient recycling is being developed in one acre area of East Champaran, Bihar. Surveys covering over 40 orchards across 10 blocks identified suitable sites at Kalyanpur. Initial soil analysis revealed alkaline pH (6.89–8.54), low EC (0.21–0.27 dS m⁻¹), and low organic carbon (0.25–0.61%). Low-cost goat and poultry units with turmeric, ginger, and guinea grass intercrops were introduced. Integrated recycling generated over 3,100 kg compost/manure and ₹95,664 net income.

6 पूर्वी भारत में बाढ़ प्रभावित और जल-जमाव वाले क्षेत्रों की पहचान और विशेषताएँ

UN-SPIDER प्रोटोकॉल का पालन करते हुए, Google Earth Engine और ArcGIS में Sentinel-1 SAR GRD C-band VV/VH इमेज (10m रिज़ॉल्यूशन) का इस्तेमाल करके पूर्वी भारत के बाढ़-संभावित इलाकों का मैप तैयार किया गया (2017-2024)। अनुमान के मुताबिक, बिहार में 9.56-22.09 लाख हेक्टेयर ज़मीन बाढ़ प्रभावित थी। पूर्वी चंपारण में, गंडक बेसिन के किनारे बसे उत्तरी और दक्षिणी इलाके सबसे ज़्यादा प्रभावित हुए। पूर्वी चंपारण, शिवहर और सीतामढ़ी के 13 ब्लॉकों के 30 गांवों में ज़मीनी सर्वे से जुलाई-सितंबर के दौरान आई भीषण बाढ़ की पुष्टि हुई। नदियों के पास पानी की गहराई 10-15 फ़ीट और दूसरी जगहों पर 4-5 फ़ीट तक पहुँच गई, और यह स्थिति 3-4 महीनों तक बनी रही। मधुबन, पकड़ी दयाल और पताही में पानी की गहराई 12-15 फ़ीट थी और पानी 10-15 दिनों तक जमा रहा। बागमती नदी के पास शिवहर में 10-12 दिनों तक पानी की गहराई 8-12 फ़ीट रही। सीतामढ़ी में 7-11 दिनों तक पानी की गहराई 3-7 फ़ीट देखी गई, जिससे पुराने नदी-मार्गों के पास पानी की निकासी की गंभीर समस्या का पता चलता है।

Delineation and characterization of flood-prone and waterlogged areas in Eastern India

Flood-prone areas of Eastern India, 2017-2024, were mapped using Sentinel-1 SAR GRD C-band VV/VH images at 10m resolution in Google Earth Engine and ArcGIS following UN-SPIDER protocol. An estimated 9.56-22.09 lakh ha in Bihar was flood-prone. In East Champaran, northern and southern areas along the Gandak basin were worst affected. Ground surveys in 30 villages across 13 blocks of East Champaran, Sheohar, and Sitamarhi confirmed severe July-September flooding. Water depth reached 10-15 ft near rivers and 4-5 ft elsewhere, persisting 3-4 months. Madhuban, Pakri Dayal, Patahi had 12-15 ft depth with 10-15-day stagnation. Sheohar near Bagmati had 8-12 ft for 10-12 days. Sitamarhi showed 3-7 ft depth lasting 7-11 days, indicating chronic drainage issues near paleo-channels.

7

शीतकालीन मक्का में सिंचाई-जल बचत तकनीकों का मूल्यांकन

तीन साल के अध्ययन (2021-2024) में, अनाज की पैदावार सिंचाई की मात्रा के साथ सीधे तौर पर बढ़ी; पूरी सिंचाई (I1) में यह सबसे ज़्यादा थी और बहुत कम पानी मिलने (I3) पर सबसे कम। इसके उलट, पानी की उत्पादकता (WP) मध्यम कमी (I2) की स्थिति में सबसे ज़्यादा रही। सिंचाई के सभी तरीकों में, बारी-बारी से फर्रो सिंचाई (alternate furrow irrigation) के तरीकों (F4 और F5) ने पारंपरिक तरीकों से बेहतर नतीजे दिए। I2F4 कॉम्बिनेशन ने दक्षता को सबसे अच्छा बनाया; इसमें पैदावार में बहुत कम कमी के साथ सबसे ज़्यादा औसत WP (2.66 kg m^{-3}) और पानी की सबसे ज़्यादा बचत (28.09%) हासिल हुई। इसलिए, मध्यम सिंचाई कमी (80% ETc) को बारी-बारी से फर्रो विधि F4 (15 cm गहराई) के साथ मिलाना पानी की कमी वाले इलाकों के लिए सबसे अच्छी मैनेजमेंट रणनीति है।

Evaluation of irrigation-water saving techniques in winter maize

Over a three-year study (2021-2024), grain yield scaled linearly with irrigation volume, maximizing under full irrigation (I1) and minimizing under severe deficit (I3). Conversely, water productivity (WP) peaked under moderate deficit (I2). Across all irrigation treatments, alternate furrow irrigation methods (F4 and F5) outperformed conventional layouts. The I2F4 combination optimized efficiency, achieving the highest average WP (2.66 kg m^{-3}) and maximum water savings (28.09%) with minimal yield reduction. Thus, combining a moderate irrigation deficit (80% ETc) with alternate furrow method F4 (15 cm depth) represents the ideal management strategy for water-scarce regions.

8

उत्तर बिहार की जलभराव स्थितियों में जैविक धान -मछली-बत्तख आईएफएस मॉडल का विकास

जैविक धान-मछली-बत्तख IFS मॉडल पर खेत में किए गए प्रयोगों से पता चला कि ऑर्गेनिक पोषक तत्वों ने मिट्टी में ऑर्गेनिक कार्बन को 1.17% तक बढ़ाया और नमी भी बेहतर की, हालांकि इनऑर्गेनिक पोषक तत्वों से गेहूं ($4468 \text{ किग्रा हेक्टेयर}^{-1}$) और धान ($2450-2610 \text{ किग्रा हेक्टेयर}^{-1}$) की पैदावार ज़्यादा मिली। जैविक, रासायनिक और मिश्रित स्रोतों से मसूर की पैदावार लगभग एक जैसी रही। जैविक निवेश के तौर पर सेस्बेनिया और ग्लिरिसिडिया से हरी खाद का इस्तेमाल किया गया। मछली के लिए नौ आश्रय स्थल बनाए गए जिनमें रोहू, कतला, मृगल और कॉमन कार्प मछलियाँ ($4000 \text{ हेक्टेयर}^{-1}$) की दर से डाली गईं। मेड़ पर केला, पपीता, अनार और ग्लिरिसिडिया के पौधे लगाए गए, जिनसे केले की 558 दर्जन पैदावार हुई। पानी की कमी के कारण मछली-बत्तख इंटीग्रेशन सीमित होने के बावजूद, इस सिस्टम ने बाढ़-संभावित इलाकों के लिए टिकाऊ, विविध उत्पादन और मिट्टी की सेहत से जुड़े फायदे दिखाए।

Development of organic rice-fish-duck IFS model in waterlogging situations of North Bihar

On-farm experiments on organic rice-fish-duck IFS models showed organic nutrients improved soil organic carbon up to 1.17% and moisture, though inorganic nutrients gave higher wheat 4468 kg ha^{-1} and rice $2450-2610 \text{ kg ha}^{-1}$ yields. Lentil yields were comparable across organic, inorganic, and mixed sources. Green manuring with *Sesbania* and *Gliricidia* was used as organic input. Nine fish refuges stocked with rohu, catla, mrigal, common carp @ 4000 ha^{-1} were established. On-dyke banana, papaya, pomegranate, *gliricidia* were maintained, with banana yielding 558 dozen fruits. Despite water scarcity limiting fish-duck integration, the system demonstrated sustainable, diversified production and soil health benefits for flood-prone areas.

9

बिहार के चयनित जिलों में किसानों की आजीविका, पशुओं के स्वास्थ्य और अपनाई जाने वाली अनुकूलन रणनीतियों पर बाढ़ और जल-जमाव के असर का बहुआयामी अध्ययन।

इस अवधि के दौरान, पूर्वी चंपारण और दरभंगा जिलों में 480 उत्तरदाताओं से डेटा एकत्र किया गया। फसल उत्पादन और उत्पादकता में कमी, दूध उत्पादन में कमी, चारे की अनुपलब्धता और शिक्षा जैसे संकेतक अध्ययन क्षेत्र में 75% से अधिक उत्तरदाताओं को प्रभावित करते हैं। दरभंगा के उत्तरदाता किसानों को जलवायु-प्रतिरोधी किस्मों की खेती, आकस्मिक योजना, फसल विविधीकरण और फसल/पशुधन बीमा जैसी रणनीतियों का बेहतर ज्ञान था। वहीं पूर्वी चंपारण के किसानों ने एकीकृत कृषि प्रणाली को अपनाना, भूमि सुधार और भूमि संशोधन, चारे का भंडारण और बाजरा की खेती जैसी रणनीतियों का बेहतर ज्ञान प्रदर्शित किया। दोनों जिलों में अनुकूलन रणनीतियों को अपनाने का स्तर बहुत कम था। चारे का भंडारण, श्रीअन्न की खेती और औपचारिक/अनौपचारिक क्षेत्र से ऋण लेना जैसी कुछ रणनीतियाँ पूर्वी चंपारण जिले में अपेक्षाकृत बेहतर (30%) रूप से अपनाई गई। दोनों जिलों में अधिकांश किसान मध्यम स्तर की कृषि पद्धति को अपना रहे थे (दरभंगा में 52.50% और पूर्वी चंपारण में 56.67%)। पूर्वी चंपारण और दरभंगा के किसानों की आजीविका पूंजी पर किए गए अध्ययन से पता चला कि अधिकांश किसानों के पास सीमित आजीविका संसाधन थे। किसानों को खेती का मध्यम अनुभव और छोटी भूमि जोत थी, लेकिन प्रशिक्षण का अभाव, कृषि विस्तार से संपर्क कमजोर और डिजिटल उपकरणों तथा बाहरी सहायता तक सीमित पहुंच थी। आर्थिक रूप से, अधिकांश परिवारों की वार्षिक आय ₹1-2.5 लाख थी, बचत कम थी और ऋण तक पहुंच सीमित थी। सड़कें, बाजार, बिजली और कृषि उपकरण जैसे भौतिक बुनियादी ढांचे की स्थिति आम तौर पर खराब से औसत थी, जो बिहार के बाढ़ प्रभावित क्षेत्रों में आजीविका की असुरक्षा को दर्शाती है।

Multidimensional study on the impact of flood and waterlogging on farmer's livelihood, animal health and adaptation strategies followed in selected districts of Bihar

During this period, data collection was taken up in East Champaran and Darbhanga districts with 480 respondents. Indicators like crop production & productivity loss, reduced milk yield, unavailability of fodder and education affected more than 75 % of respondents in the study area. Respondent farmers from Darbhanga had better knowledge in the strategies like cultivation of climate resilient varieties, contingent planning, crop diversification and crop/livestock insurance. While farmers from East Champaran exhibited a better knowledge level in the strategies like adoption of Integrated Farming System, land shaping and land modification, storage of fodder and cultivation of millets. In both the districts, very poor adoption of adaptation strategies was exhibited. Strategies like Storage of fodder in concentrate form, Cultivation of millets, borrowing loans from formal/informal sector were few that had relatively better (30%) adoption in East Champaran district. Majority of farmers in both the districts were in the medium adoption range (52.50% in Darbhanga and 56.67% in East Champaran). The study on livelihood capitals of farmers in East Champaran and Darbhanga revealed that most farmers possessed limited livelihood assets. Farmers had moderate farming experience and small landholdings, but low training exposure, weak extension contact, and limited access to digital tools and external support. Financially, most households earned ₹1–2.5 lakh annually with low savings and restricted credit access. Physical infrastructure such as roads, markets, electricity, and farm implements was generally poor to average, indicating livelihood vulnerability in the flood-prone regions of Bihar.

10

मृदा स्वास्थ्य आधारित फसल प्रणाली अभिकल्प तथा संसाधन-कुशल उपयोग करने वाली रोपण रणनीतियाँ

यह प्रोजेक्ट जून 2025 में शुरू हुआ, जिसमें DSR, ट्रांसप्लांटेड राइस (रोपाई वाली धान), ज़ीरो टिलेज, रिज-बेड प्लांटिंग और पारंपरिक टिलेज का इस्तेमाल करके 11 तरह की फसल प्रणालियों पर फील्ड एक्सपेरिमेंट किए गए। फसल के क्रम में धान-गेहूं-मूंग, रागी-सरसों-सेसबेनिया, मक्का-गेहूं-सब्जियां, सोयाबीन-सरसों-सब्जियां, बाजरा-आधारित प्रणालियां और धान-मक्का फसल चक्र शामिल थे। पहले साल में, DSR धान की पैदावार 3,340 kg ha⁻¹ रही, जो ट्रांसप्लांटेड धान (2,600 kg ha⁻¹) से 28% ज्यादा थी। मक्का को हरे चारे के तौर पर उगाया गया। ज़ीरो टिलेज और इंटीग्रेटेड रोटेशन में शुरूआती बायोमास और संसाधन दक्षता बेहतर देखी गई। पारंपरिक तरीकों की तुलना में DSR और ZT प्रणालियों में पैदावार 18-30% ज्यादा रही। सोयाबीन प्रणालियां काफी हद तक स्थिर रहीं; जल-जमाव की स्थिति में बाजरा की पैदावार कम लेकिन स्थिर रही। इस शुरूआती साल में तरीकों को स्टैंडर्डाइज़ किया गया, और पैदावार, मिट्टी की सेहत और सस्टेनेबिलिटी को मापने के लिए आगे और ट्रायल की योजना बनाई गई।

Soil health driven cropping system design and resource efficient planting strategies

The project began in June 2025 with field experiments on 11 cropping system scenarios using DSR, transplanted rice, zero tillage, ridge bed planting, and conventional tillage. Crop sequences included rice-wheat-mungbean, finger millet-mustard-sesbania, maize-wheat-vegetables, soybean-mustard-vegetables, pearl millet-based systems, and rice-maize rotations. In year one, DSR rice yielded 3,340 kg ha⁻¹, 28% higher than transplanted rice at 2,600 kg ha⁻¹. Maize was grown as green fodder. Zero tillage and integrated rotations showed better early biomass and resource efficiency. DSR and ZT systems had an 18-30% yield advantage over conventional methods. Soybean systems were moderately stable; pearl millet gave lower but stable yields under waterlogging. This baseline year standardized practices, with replicated trials planned to quantify yields, soil health, and sustainability.

11 आत्मनिर्भर कुक्कुट-मछली-बागवानी आधारित एकीकृत खेती का विकास और मूल्यांकन

बिहार के बाढ़ प्रभावित क्षेत्रों में जलभराव, कम कृषि आय तथा एकल फसल प्रणाली के कारण कृषि उत्पादन गंभीर रूप से प्रभावित होता है। इन चुनौतियों के समाधान हेतु संसाधन पुनर्चक्रण, आजीविका सुरक्षा एवं आय विविधीकरण को बढ़ावा देने के लिए आत्मनिर्भर कुक्कुट-मत्स्य-बागवानी आधारित एकीकृत कृषि प्रणाली (IFS) मॉडल विकसित किया जा रहा है। मृदा विश्लेषण में क्षारीय pH (8.55–8.91), कम EC (0.127–0.510 dS m⁻¹) तथा SOC 0.53–0.67% पाया गया। IFS मॉडल के अंतर्गत वनराजा एवं सोनाली कुक्कुट पक्षियों ने 205 दिनों में 1.65 किग्रा भार प्राप्त किया तथा 1,333 अंडों से ₹10,664 आय हुई, जबकि पक्षियों की बिक्री से ₹18,800 प्राप्त हुए। पुनर्चक्रण द्वारा 3.7 टन से अधिक कम्पोस्ट/खाद का उत्पादन हुआ, जबकि केला, पपीता एवं मत्स्य घटकों ने प्रणाली की स्थिरता एवं लाभप्रदता को मजबूत किया।

Development and assessment of self-sustaining poultry-fish-horti based integrated farming

Flood-prone regions of Bihar face severe agricultural constraints due to waterlogging, low farm income, and risks associated with monocropping systems. To address these challenges, a self-sustaining Poultry-Fish-Horti based Integrated Farming System (IFS) model is being developed to enhance resource recycling, livelihood security, and income diversification. Soil analysis revealed alkaline pH (8.55–8.91), low EC (0.127–0.510 dS m⁻¹), and SOC ranging from 0.53–0.67%. Under the IFS model, Vanraja and Sonali poultry birds attained 1.65 kg body weight by 205 days, producing 1,333 eggs and generating ₹10,664 income, while poultry sales generated ₹18,800. Recycling produced over 3.7 tonnes compost/manure, while banana, papaya and fish components strengthened system sustainability and profitability.

12 निचले इलाकों में बागवानी आधारित खेती के लिए भूमि का आकार निर्धारण

इस परियोजना के अंतर्गत, भूमि आकारिकीकरण (Land Shaping) से शुद्ध आय में उल्लेखनीय वृद्धि पाई गई। अल्प अवधि के जलभराव वाले गैर-भूमि आकारिकीकृत निम्न भूमि क्षेत्रों की तुलना में भूमि आकारिकीकरण से लगभग 30% अधिक शुद्ध आय प्राप्त हुई। वहीं, 4–5 माह तक जलभराव से प्रभावित निम्न भूमि क्षेत्रों की तुलना में भूमि आकारिकीकरण के अंतर्गत लगभग 250% अधिक आय प्राप्त हुई। विभिन्न फल फसलों में अमरूद, केला तथा बेर का प्रदर्शन आम, बेल एवं नींबू फसलों की अपेक्षा बेहतर पाया गया। यह भी देखा गया कि फसल विविधीकरण प्रणाली (फसल + सब्जी फसल + फल फसल) से पारंपरिक धान-गेहूँ-दलहन फसल प्रणाली की तुलना में लगभग 2.5 गुना अधिक शुद्ध आय प्राप्त हुई। अवतल क्यारी (Sunken Bed) में रबी फसलों से प्राप्त शुद्ध लाभ खरीफ फसलों की अपेक्षा अधिक पाया गया। भूमि आकारिकीकरण आधारित मॉडलों से गैर-भूमि आकारिकीकृत पारंपरिक कृषि प्रणालियों की तुलना में 2.5 से 5.0 गुना अधिक खाद-समतुल्य उपज (NPK मूल्य के आधार पर) प्राप्त हुई। इसी प्रकार, इन मॉडलों के अंतर्गत रोजगार सृजन भी पारंपरिक कृषि प्रणालियों की तुलना में लगभग दोगुना पाया गया।

Land Shaping for horti-based farming in low-lying areas

Under this project, irrespective of the model adopted, land shaping was found to increase net income by about 30% compared to non-land-shaped low-lying areas experiencing only short-term waterlogging. In areas affected by prolonged waterlogging (4–5 months), land shaping generated nearly 250% higher income than non-land-shaped lowlands. Among the fruit crops evaluated, guava, banana, and ber performed better than other fruit crops such as mango, bael, and citrus. It was also observed that agri-diversification involving field crops, vegetable crops, and fruit crops generated approximately 2.5 times higher net income than the traditional rice-wheat-legume cropping system. In sunken beds, the net returns from rabi crops were higher than those from kharif crops. Land-shaping models also produced 2.5–5.0 times higher manure-equivalent yield (in terms of NPK value) compared to conventional non-land-shaped farming systems. Similarly, employment generation under land-shaping models was found to be nearly double that of conventional farming systems.

13 जलभराव वाले पारिस्थितिक तंत्रों के लिए कम लागत वाली मशीनरी

यह परियोजना का जलीय कृषि के लिए IoT आधारित जलभराव वाले पारिस्थितिक तंत्रों के लिए कम लागत वाली मशीनरी के डिजाइन एवं विकास पर आधारित है। इस वर्ष रियल-टाइम तालाब जल गुणवत्ता निगरानी प्रणाली/ मशीनरी का विकास किया गया। यह प्रणाली pH, घुलित ऑक्सीजन, तापमान, टर्बिडिटी तथा मीथेन जैसे महत्वपूर्ण जल गुणवत्ता मानकों की निरंतर निगरानी करती है। विभिन्न सेंसरों को ESP32 माइक्रोकंट्रोलर के साथ एकीकृत किया गया है तथा डेटा को Wi-Fi के माध्यम से ThingSpeak क्लाउड प्लेटफॉर्म पर भेजा जाता है। विकसित प्रणाली स्थानीय तथा दूरस्थ दोनों प्रकार की निगरानी सुविधा प्रदान करती है। यह तकनीक श्रम, समय तथा लागत को कम करते हुए स्मार्ट मत्स्य पालन प्रबंधन एवं बेहतर निर्णय लेने में सहायक सिद्ध होती है।

Low-cost machinery for waterlogged ecosystems

This project focuses on the design and development of an IoT-based Low-Cost Machinery for Waterlogged Ecosystems. This year, real-time pond water quality monitoring system for aquaculture applications has been developed. The system continuously monitors important water quality parameters such as pH, dissolved oxygen, temperature, turbidity, and methane using multiple sensors integrated with an ESP32 microcontroller. Real-time data are displayed locally and transmitted to the ThingSpeak cloud platform through Wi-Fi for remote monitoring and analysis. The developed system provides continuous monitoring, reduces manual labor, minimizes delayed response, and supports smart aquaculture management. The technology is cost-effective, reliable, and suitable for field-level deployment in fish ponds.

14 कृषि, मत्स्य पालन एवं पशुपालन में उत्तम कृषि पद्धतियों के माध्यम से लघु किसानों की आजीविका में सुधार - फार्मर्स फर्स्ट कार्यक्रम (Farmers FIRST)

बिहार में उत्पादकता और आय बढ़ाने के लिए 'फार्मर्स फर्स्ट' (Farmer FIRST) प्रोजेक्ट के तहत फसल, पशुपालन, मछली पालन और बागवानी को मिलाकर चार IFS मॉडल शुरू किए गए। इन मॉडलों में शामिल थे: मछली - फसल-बकरी; मछली-फसल- बकरी- गाय; मछली- बतख- बकरी और कचरा रीसाइक्लिंग के लिए मछली-फसल-बकरी-वर्मिकम्पोस्टिंग। उज्जैनपुर और बलभद्रपुर में लागू किए गए इन मॉडलों से धान, मक्का, सब्जियाँ, मछली, बकरी, गाय और बतख पालन के ज़रिए आय के कई स्रोत बने। प्रति हेक्टेयर परिवार की कुल कमाई ₹1,00,238 से ₹4,11,750 के बीच रही, जिससे इनकी आर्थिक व्यवहार्यता साबित हुई। विस्तार गतिविधियों में फील्ड डे, डेमो, ट्रेनिंग, किसान-वैज्ञानिक बैठकें, एक्सपोज़र विज़िट, किसान दिवस और 527 किसानों को 6458 किलोग्राम इनपुट का वितरण शामिल था। कुल आठ IFS मॉडल स्थापित किए गए, जिससे खाद्य सुरक्षा, आत्मनिर्भरता और जलवायु के प्रति लचीलापन बढ़ा।

Improving livelihood of small farmers through good practices in agriculture, fisheries and animal husbandry -Farmers First (FFP)

Four IFS models integrating crops, livestock, fisheries, and horticulture were introduced under Farmers FIRST project to boost productivity and income in Bihar. Models included: Fish-Crop-Goat, Fish-Crop-Goat-Cow, Fish-Duck-Goat, and Fish-Crop-Goat-Vermicomposting for waste recycling. Implemented in Ujhilpur and Balbhadarpur, they diversified income through rice, maize, vegetables, fish, goat, cow, and duck rearing. Net household earnings ranged ₹1,00,238 to ₹4,11,750 ha⁻¹, proving economic viability. Extension activities included field days, demonstration, training, farmer-scientist meets, exposure visits, Kisan Diwas, and distribution of 6458 kg inputs to 527 farmers. Eight IFS models were established, enhancing food security, self-reliance, and climate resilience.



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अनुसूचित जाति उपयोजना (एससीएसपी)

यह संस्थान बिहार के पूर्वी चंपारण जिले में SCSP योजना लागू कर रहा है। साल 2025 के दौरान, ICAR-MGIFRI, पिपराकोठी द्वारा चलाए गए अलग-अलग इनपुट वितरण और क्षमता निर्माण कार्यक्रमों से कुल 5,954 अनुसूचित जाति के किसानों को सीधा फ़ायदा मिला। क्षमता निर्माण के नौ कार्यक्रम आयोजित किए गए, जिनमें ट्रेनिंग, जागरूकता और एक्सपोज़र विज़िट, किसान मेले और पशु स्वास्थ्य शिविर शामिल थे। इन कार्यक्रमों से 5,954 अनुसूचित जाति के किसान जुड़े, जिनमें 57% पुरुष और 43% महिलाएँ शामिल थीं।

Schedule Cast Sub Plan (SCSP)

The institute has been implementing SCSP scheme in the East Champaran district of Bihar. During 2025, a total of 5954 Scheduled Castes farmers has got direct benefit from various input distribution and capacity building programs provided by ICAR-MGIFRI, Piprakothi Nine capacity-building programs were conducted, including trainings, awareness-cum-exposure visits, kisan melas, and animal health camps. These reached 5,954 Scheduled Caste farmers, with 57% men and 43% women participants.

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एनईएच उप-योजना

इस योजना के तहत, ICAR-MGIFRI ने उत्तर-पूर्वी पहाड़ी क्षेत्र में स्थित या काम कर रहे अन्य ICAR संस्थानों, KVKs और विश्वविद्यालयों के साथ मिलकर किसान समुदाय के लिए ट्रेनिंग और क्षमता निर्माण कार्यक्रम, इनपुट वितरण कार्यक्रम, प्रदर्शन, प्रदर्शनी, कार्यशाला, सेमिनार आदि आयोजित करने के लिए मिलकर काम किया। साल 2025 के दौरान, कुल 345 किसानों को - जिनमें 145 (42.03%) पुरुष और 200 (57.97%) महिलाएँ शामिल थीं - इन गतिविधियों से सीधा फ़ायदा मिला। ICAR RCER पटना के सहयोग से NEH घटक के तहत टेक्नोलॉजी और ज्ञान साझा करने वाली एक कार्यशाला भी संयुक्त रूप से आयोजित की गई थी।

NEH sub plan

Under this scheme, ICAR-MGIFRI made a collaborative effort with other ICAR institutes, KVKs, universities located/ working in the North Eastern hill region for imparting training and capacity building program, input distribution program, demonstration, exhibition, workshop, seminar, etc. for the farming community. During the year 2025, A total of 345 farmers, including 145 (42.03%) males and 200 (57.97%) females, received direct benefits from such activities. A Technology and knowledge sharing workshop under the NEH component was also jointly organized in collaboration with ICAR-RCER Patna.

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शोध परियोजनाएँ, प्रकाशन, पुरस्कार और मान्यताएँ

ICAR-MGIFRI के वैज्ञानिक 9 संस्थान वित्तपोषित और 3 बाहरी वित्तपोषित वाले प्रोजेक्ट/स्कीम (FFP, SCSP और NEH) पर काम कर रहे हैं। 2025 के दौरान, संस्थान ने 8 संस्थान परियोजना पूरे किए, जिनके नतीजे और फ़ायदे इस इलाके के किसानों के लिए बहुत काम के होंगे। संस्थान के एक परियोजना के तहत विकसित तकनीक को ICAR-NRM Division, नई दिल्ली से सर्टिफिकेशन मिला। इस संस्थान के वैज्ञानिकों ने 24 शोध पत्र, 6 पुस्तक अध्याय और 13 लोकप्रिय लेख/ लीफ़लेट/तकनीकी बुलेटिन प्रकाशित किए हैं। कई वैज्ञानिकों को उनके योगदान के लिए पुरस्कार, सम्मान और पहचान मिली।

Research projects, publication, awards and recognitions

Scientists of ICAR-MGIFRI are working on 9 institute project, 3 externally funded projects/ scheme (FFP, SCSP and NEH). During 2025, institute has completed 8 institute projects, whose outputs and outcomes will be highly useful for the farming community in the region. One technology developed was certified by ICAR, New Delhi. Scientists from this institute have published 24 research papers, 6 book chapters, and 13 popular article/ leaflet / technical bulletins. Several scientists received awards, honors, and recognitions for their contributions.



18 मानव संसाधन विकास, प्रशिक्षण और क्षमता निर्माण, किसान मेला, सेमिनार, कार्यशाला आदि

मानव संसाधन विकास के तहत हमारे 6 कर्मचारियों ने अलग-अलग संगठनों से कई विषयों पर ट्रेनिंग ली। संस्थान ने SCSP, NEH, FFP और BAMETI व ATMA (बिहार के अलग-अलग संस्थानों), मत्स्य विभाग, उत्तर प्रदेश द्वारा प्रायोजित ट्रेनिंग आयोजित की। इसके अलावा, संस्थान ने BAMETI, Patna, ATMA Siwan आदि से मिले फंड से क्षमता निर्माण (कैपेसिटी बिल्डिंग) की 6 अलग-अलग गतिविधियां और सेमिनार आयोजित किए। 2 दिन के राष्ट्रीय सेमिनार में लगभग 180 प्रतिनिधि और 900 किसान शामिल हुए। सेमिनार के अलग-अलग सत्रों में 16 मुख्य/ विशेष व्याख्यान और 50 मौखिक प्रस्तुतियां दी गईं। प्रतिनिधियों ने 86 पोस्टर भी प्रस्तुत किए। संस्थान ने 2025 में 4 किसान मेलों में भाग लिया और किसानों के फायदे के लिए अपनी गतिविधियों के नतीजों का प्रदर्शन किया।

HRD, training & capacity building, kisan mela, seminar, workshop etc.

Under HRD, 6 officials of this institute received training on various topics from different organizations. The institute conducted training under SCSP, NEH, FFP, Sponsored training from BAMETI, ATMA from different institute of Bihar, Dept. of fisheries UP. Additionally, the institute conducted 6 different capacity building activities, seminar from the fund received from BAMETI, Patna, ATMA Siwan etc. In the national seminar, around 180 delegates and 900 farmers participated/attended the 2-day national seminar. There were 16 lead/ key note/ invited lectures and 50 oral presentations were delivered in different sessions in the seminar. 86 posters were presented by the participants. The institute participated in 4 Kisan melas during 2025, showcased outputs of institute activities for the benefits of farmers.

19 विकसित कृषि संकल्प अभियान (वीकेएसए) - 2025

संस्थान ने 29 मई से 12 जून तक वीकेएसए 2025 के तहत सक्रिय रूप से क्षमता निर्माण, प्रशिक्षण और जागरूकता अभियान आयोजित किए। विभिन्न केवीके से जुड़े संस्थान के वैज्ञानिकों और तकनीकी कर्मचारियों की छह टीमों ने 252 गांवों का दौरा किया और बिहार के पूर्वी चंपारण और शिवहर जिलों में 35,980 किसानों तक पहुंचे। इन अभियान के दौरान, किसानों के नवाचारों और प्रमुख नीतिगत मुद्दों की पहचान की गई। टीमों ने किसानों को महत्वपूर्ण जानकारी दिए, जिनमें अनुशंसित कृषि पद्धतियों का पैकेज, कृषि-सलाहकार, सरकारी योजनाएं, कृषि-ड्रोन प्रदर्शन, साहित्य वितरण, फीडबैक संग्रह और ऑन-साइट निदान शामिल हैं।

Viksit Krishi Sankalp Abhiyan (VKSA) - 2025

The institute actively organized capacity-building, training, and awareness campaigns under VKSA 2025 from May 29 to June 12. Six teams of scientists and technical staff from the institute, attached to various KVKs, visited 252 villages and reached 35,980 farmers across East Champaran and Sheohar districts of Bihar. During these interactions, farmers' innovations and key policy issues were identified. The teams delivered important messages to farmers, including package of practices, agro-advisories, government schemes, agri-drone demonstrations, literature distribution, feedback collection, and on-site diagnostics.

20 स्वच्छ भारत अभियान

सभी कर्मचारियों ने स्वच्छ भारत अभियान में सक्रिय रूप से भाग लिया; वर्ष 2025 के दौरान संस्थान परिसर, सार्वजनिक स्थानों और गांवों में लगभग 45 सफाई कार्यक्रम और 25 स्वच्छता जागरूकता अभियान आयोजित किए गए। सभी वैज्ञानिकों और कर्मचारियों ने स्वच्छता पखवाड़ा 2025 में सक्रिय रूप से भाग लिया। साथ ही, आस-पास के गांवों के लोगों और छात्रों को स्वच्छता के लिए प्रेरित करने हेतु अभियान चलाए गए।

Swachha Bharat Abhiyan

All the staffs of the institute participated actively in Swachha Bharat Abhiyan; around 45 cleaning events, 25 Swachhata awareness campaigns were conducted during 2025 at the Institute premises, public places and villages. All the scientists and staffs actively participated in Swachhata Pakhwada 2025. Simultaneously, campaigns were organized to motivate neighboring village people and, students for cleanliness.

Introduction, Mission and Mandates

The ICAR–Mahatma Gandhi Integrated Farming Research Institute (ICAR–MGIFRI), formerly known as the National Research Centre on Integrated Farming, was established on August 21, 2015, with the primary mandate of leading research and development on Integrated Farming Systems (IFS) at the national level. The institute is situated at Piprakothi (26°32' N, 84°56' E) in Bihar, and encompasses a 25-acre campus housing the main office-cum-laboratory building, guest house, and auditorium. Within the premises lies the research farm, covering an area of 8.4 hectares, dedicated to field experimentation and model development.

Floods pose one of the most severe challenges to India's socio-economic and agricultural sustainability, causing extensive damage to infrastructure, human settlements, and livelihoods. Nearly 41.13 million hectares—about 13% of India's geographical area—are categorized as flood-prone, affecting an estimated 113 million people annually. States such as Uttar Pradesh, Bihar, Assam, West Bengal, and Odisha bear the brunt of recurrent flooding. Bihar suffers from widespread waterlogging and inundation caused by rivers like the Gandak and Koshi, impacting 28 out of 38 districts.

The Institute is committed to developing resilient, resource-efficient, and climate-smart farming solutions for flood-prone and waterlogged ecosystems. The Institute is actively working on integrated farming systems, water management technologies, resilient crop and livestock production systems, eco-friendly disease management, mechanization for waterlogged situations, and livelihood diversification approaches aimed at transforming flood-affected regions into productive and profitable agricultural landscapes. Through dedicated scientific innovation and technological convergence, we have successfully developed Integrated Farming System (IFS) models through integrating e.g., fish (IMC), goat (Black Bengal), Fish with goat/cattle/ buffalo/ duck/ poultry/ horticultural crops, modified lowland area and converted

horti-based IFS models etc for water congested ecologies that directly uplift small and marginal farmers of Bihar, Eastern India. Furthermore, our dedicated efforts in participatory research, capacity building/ training/ demonstration and stakeholder-centric interventions, the institute strives to enhance resilience, improve farm income, and promote sustainable natural resource management invulnerable agro-ecosystems. We firmly believe that integrated and location-specific technological solutions can convert the challenges of flood and waterlogging into opportunities for sustainable agricultural development and livelihood security.

Objectives

- To develop and demonstrate location-specific and farmer-centric integrated farming system models involving fishery and animal components.
- To act as a repository of information on all aspects of integrated farming.
- To facilitate and promote coordination and dissemination of the technology for integrated farming through network/consortia approach involving ICAR institutes, state agricultural universities, and other agencies.
- To provide scientific leadership and act as a center for vocational as well as advanced training to promote the technologies related to integrated farming.
- To collaborate with relevant national and international agencies in liaison with state and central government departments for technology dissemination.
- To provide need-based consultancy and advisory support in promoting integrated farming.

Vision

Sustainable management of natural resources and diversified farming for achieving food, nutrition and livelihood security in the country

Mission

Developing site-specific, cost-effective and demand-driven integrated farming systems for flood-prone and waterlogged ecosystems

Mandates

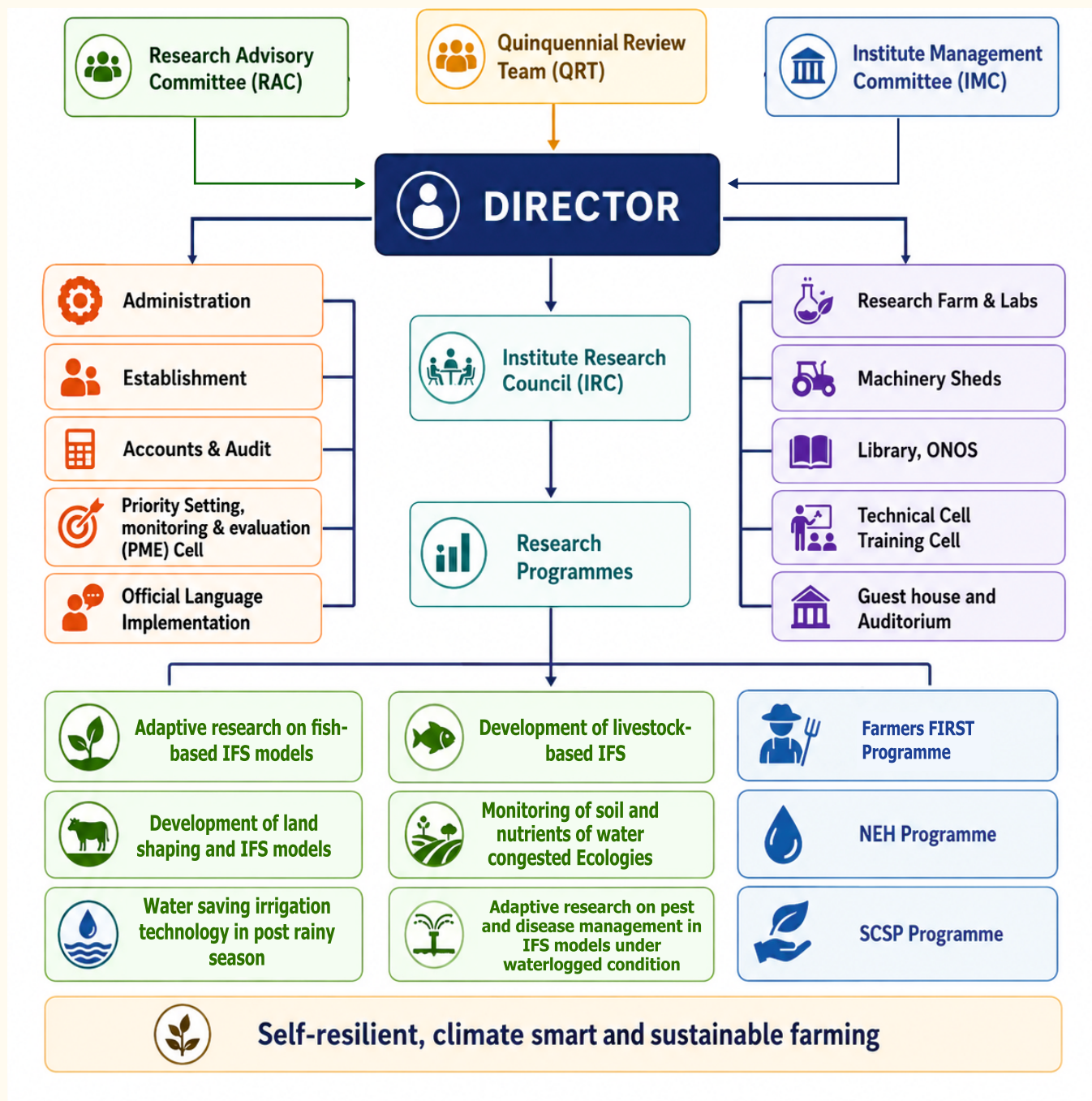
- Adaptive research for location-specific integrated farming system models (fish-based) for flooded, flood-prone and wetland ecology.
- Centre for vocational and advanced training to the farmers to promote fish-based integrated farming systems.

Five-major action areas

- Delineation, situation analysis and mapping of flood-prone, flood-affected and waterlogged areas.
- Characterization and monitoring of soils and nutrient status of water congested ecologies.
- Design and development of IFS technology /packages/ model for water congested ecosystems.
- Post-flood crop management, design and development of efficient water management technology.
- Capacity building of farmers and other stakeholders on different components of IFS.

OGRANOGRAM

ICAR-MGIFRI



Weather report

The climatic analysis of the study location indicates a predominantly subtropical monsoonal climate characterized by distinct seasonal variations in temperature, humidity, and rainfall distribution throughout the year (Fig 1). The annual thermal regime shows that the hottest period occurs during the pre-monsoon months of April to June, while winter months remain comparatively cool and dry. The average maximum temperature ranged from 22.5°C in December to 39.1°C in June, whereas the average minimum temperature varied between 9.2°C in December and 28.4°C in June. Mean monthly temperature increased steadily from 17.2°C in January to a peak of 33.7°C in June, followed by a gradual decline towards winter. The pre-monsoon months (April–June) experienced extremely high temperatures exceeding 38°C, indicating severe thermal stress conditions and enhanced evapotranspiration demand. Relative humidity exhibited strong seasonal variability. The lowest humidity was observed during March (29.1%), indicating dry atmospheric conditions, while the highest relative humidity occurred during August and September (84.7% and 84.6%, respectively), coinciding with the peak monsoon period. Humidity levels remained consistently high from July to November due to persistent monsoonal influence and increased atmospheric moisture availability. Rainfall distribution clearly

reflects the dominance of the southwest monsoon. Annual precipitation was highly concentrated between June and October, accounting for most of the total rainfall received in the region. The highest monthly rainfall was recorded in August (274.97 mm) followed by October (253.62 mm) and September (188.66 mm). Rainfall during winter months was negligible, with only 0.17 mm in January and 0.01 mm in December. The onset of effective monsoon rainfall generally begins in June and intensifies during July–September. The number of rainy days also followed a strong monsoonal pattern. Maximum rainy days were recorded during August (22 days) and July (21 days), while almost no rainy days occurred during winter months. The concentration of high rainfall within a limited number of rainy days indicates the occurrence of intense rainfall events, which may contribute to flooding and temporary waterlogging in low-lying areas. Overall, the climatic conditions suggest that the region is highly influenced by monsoonal variability, with prolonged humid conditions and heavy rainfall during the rainy season, followed by hot summers and dry winters. Such hydro-climatic characteristics significantly influence agricultural planning, cropping systems, irrigation demand, flood occurrence, and integrated farming strategies in the region.

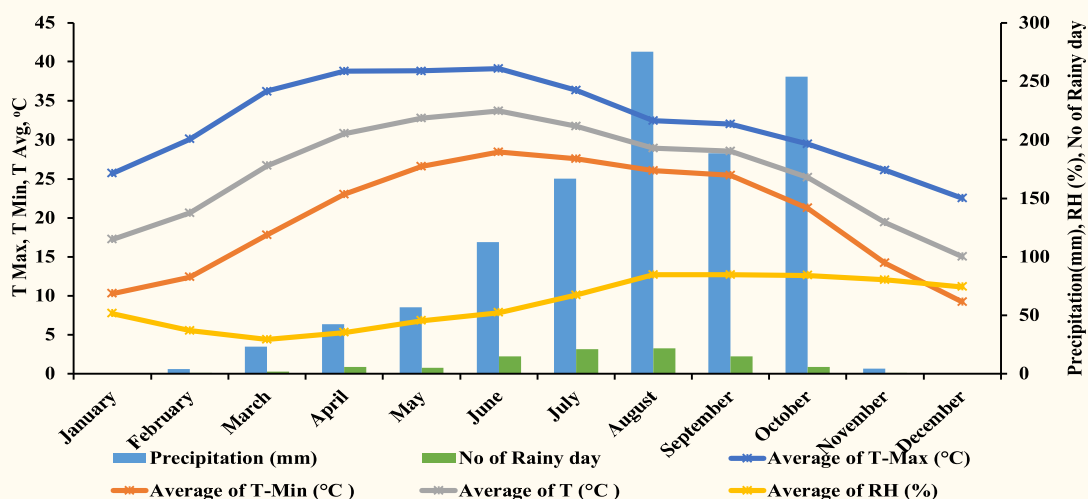


Fig. 1 Variation of weather parameters of the location

Salient Research Achievements (Institute Projects)

Development and assessment of mango-based IFS model for sustainable resource management in flood prone areas of North Bihar

Principal Investigator: Dr. Jadhav Amol Kailas

Co- Investigators: Dr. P.K. Bharti, Mrs. Haritha Mohan M. (up to 20th June, 2025)

Project Code No.: NRMAMGIFRISIL202400400020

Flood-prone regions of North Bihar, particularly East Champaran district, face severe agricultural constraints due to waterlogging, declining soil fertility, fragmented landholdings, and low profitability from traditional monocropping systems. Mango orchards, despite occupying a significant area in Bihar, suffer from irregular bearing, pest incidence, underutilization of orchard space, and limited income generation. To address these challenges, a location-specific mango-based Integrated Farming System (IFS) model integrating horticulture, livestock, poultry, intercrops, and nutrient recycling is being developed and evaluated during 2024–25 and 2025–26 under on-farm conditions in East Champaran, Bihar.

Initially, an extensive field survey was conducted to identify suitable farmer fields based on orchard condition, varietal composition, flood vulnerability, resource availability, and farmer willingness. Two orchards were selected for participatory implementation: Mr. Vijay Singh's orchard at Ghoghra village, Kalyanpur block, and Mr. Manoj Kumar Singh's orchard at Mahuwa village, Chiraiya block. Initial soil analysis of the selected orchards indicated pH 6.89 to 8.54, electrical conductivity (0.21–0.27 dS m⁻¹), and low to moderate organic carbon content (0.25–0.61%), indicating the need for organic enrichment and integrated nutrient management interventions. Low-cost goat and poultry production units were introduced within the mango orchards using bamboo and other locally available materials (Fig. 2). A goat shed costing approximately ₹20,000–25,000,

capable of accommodating 15–20 goats, and a poultry shed costing ₹10,000–15,000 with a capacity of 150–200 birds were established. Black Bengal goats and dual-purpose Vanraja and Sonali poultry birds were introduced to evaluate their adaptability and productivity under integrated orchard conditions.

Shade-tolerant intercrops including turmeric, ginger, and guinea grass were introduced within mango orchards to improve land-use efficiency and generate additional income opportunities (Fig. 3, 4). Hybrid sorghum fodder was also cultivated within fenced areas to support livestock feed requirements (Fig. 4). Under the mango-based IFS model, goats were maintained through integrated feeding involving maize grit/mustard cake (1 kg day⁻¹), wheat straw (2 kg day⁻¹), mango leaves (1.5–4 kg day⁻¹), orchard grazing, and fodder from hybrid sorghum. Approximately 30–40% of green fodder and 30% of dry fodder requirements were fulfilled through IFS components, significantly reducing dependence on external feed resources. Goat body weight increased steadily from 9.22–9.83 kg to 14.40 kg over an eight-month period (Fig. 5). Goat units produced a cumulative 1,112.79 kg of fresh droppings, which were subsequently recycled as organic manure within the orchard system. Poultry birds were managed under semi free-range conditions utilizing orchard grazing resources such as insects, weeds, grasses, termites, and fallen fruits. The average body weight of birds increased progressively from 25 g at the day-old stage to 1.58 kg by 205 days. Egg production commenced at an average age of 178.4 days, and a total of 2,368 eggs were produced during November 2025 to March 2026, generating an income of ₹23,680 (Fig. 6 and 7).

Poultry units also contributed approximately 1,402.88 kg of decomposed manure through recycling of droppings and

bedding materials. The integrated recycling of goat and poultry manure substantially improved soil health parameters within the orchard ecosystem. Soil organic carbon increased up to 0.87% over the initial values, while a slight reduction in soil alkalinity was observed, demonstrating the positive impact of organic nutrient recycling on soil quality and sustainability. Economic analysis of the mango-based IFS model revealed encouraging returns from diversified enterprises. Net income generated from different components included mango cultivation (₹30,000), goat rearing (₹15,358), poultry production (₹19,216), intercrops (₹8,650), goat compost (₹10,516), and poultry compost (₹11,924). Overall, the integrated system generated a total estimated net income of ₹95,664 from a 1-acre orchard-based IFS model.

Despite promising outcomes, several operational challenges were encountered during field implementation, including disease outbreaks, livestock mortality, predator attacks, theft, labour shortages, financial constraints, and occasional farmer negligence. Nevertheless, the study demonstrated that integration of livestock, poultry, intercrops, and nutrient recycling within mango orchards can substantially enhance resource-use efficiency, diversify income sources, improve soil fertility, and strengthen the resilience of farming systems in flood-prone ecosystems of North Bihar.

Table.1. System Economics of mango-based IFS at farmer's field

Component	Net Income (₹)	Area (m ²)
Mango	30000	2000
Goat	15358	200
Poultry	19216	200
Intercrops	8650	1400
Compost (goat)	10516	100
Compost (poultry)	11924	100
Total income and area	95664	4000



Fig.2. Low-cost goatery unit in mango orchard at Farmer site 1.



Fig.3. Low-cost poultry unit in mango orchard at Farmer site 1



Fig.4. Turmeric Var. Rajendra Sonia and Ginger Var. Local Cv at Farmers site 1



Fig.5. Grazing area for goat in mango orchard at Farmer site 1



Fig.6. Egg production at Farmers site 1



Fig.7. Tagging of goat and recording growth data at Farmer site 1

Development and assessment of self-sustaining Poultry-Fish-Horti based integrated farming

Principal Investigator: Dr. Geeta (up to July, 2025), Dr. Jadhav Amol Kailas (from August, 2025)

Co- Investigators: Dr. Jadhav Amol Kailas (up to July, 2025), Dr. Ravi Kumar, Mr. Rakesh N.

Project Code No.: NRMAMGIFRISIL202400300019

Flood-prone regions of Bihar face severe agricultural challenges due to waterlogging, declining soil fertility, unstable farm income, and risks associated with monocropping systems. Small and marginal farmers in these ecosystems often experience low productivity and poor profitability because of fragmented landholdings and lack of enterprise diversification. To address these challenges, a self-sustaining Poultry-Fish-Horti based Integrated Farming System (IFS) model is being developed and evaluated to enhance resource recycling, farm resilience, livelihood security, and income diversification under flood-prone conditions. Three modules were established comprising a poultry-only control unit, Poultry + Fish + Horti (IFS Model I), and Poultry + Fish + Horti + Crop (IFS Model II). The integrated models included poultry units (40 m²), fish ponds (480 m²), horticultural components (94.5 m²), and field crop area (1900 m²) under diversified farming conditions.

Soil analysis after one year of intervention revealed alkaline soil conditions with pH ranging from 8.55 to 8.91, low electrical conductivity (0.127–0.510 dS m⁻¹), soil moisture content between 17.12% and 21.93%, and soil organic carbon ranging from 0.53% to 0.67%. These results indicated the need for organic enrichment and integrated nutrient management practices within the farming system. Under the integrated poultry component, a total of 250 Vanraja and Sonali poultry chicks were introduced. The average body weight increased progressively from 27 g at the day-old stage to 1.65 kg by 205 days. Egg production commenced at an average age of

177.2 days, and a total of 1,333 eggs were produced during November 2025 to March 2026, generating an income of ₹10,664. Poultry sales further generated ₹18,800 through the sale of 94 birds during different production stages

Resource recycling formed a major component of the developed IFS model. Poultry droppings and bedding materials were efficiently converted into compost and organic manure. Approximately 310.04 kg and 722.98 kg of poultry droppings were generated during different production phases, which, along with bedding materials, produced more than 3.7 tonnes of decomposed compost/manure. The recycled manure contributed significantly towards nutrient recycling, improvement in soil fertility, and reduction in external fertilizer dependency. On-dyke horticultural crops were successfully integrated around fish ponds to maximize land-use efficiency and farm income. Dwarf Cavendish banana and Red Lady papaya performed particularly well under integrated conditions. Banana cultivated on a 130 m² area produced 1,689.11 kg yield with an average bunch weight of 30.71 kg, generating ₹33,782. Similarly, papaya cultivation generated additional income through fruit production. The total income from on-dyke horticultural crops reached ₹37,182. Part of the horticultural produce and crop residues were utilized as supplementary poultry feed, supporting the development of a partially self-sustaining integrated production system (Fig 8).

Economic analysis of the developed IFS model demonstrated promising returns from diversified farming enterprises. Net income generated from poultry, horticultural crops, and compost production reached ₹20,003, ₹37,182, and ₹15,198, respectively. Overall, the integrated system generated an estimated income of ₹72,383 from diversified enterprises under a 4000 m² production unit. The developed Poultry-Fish-Horti based IFS model demonstrated substantial potential for

improving farm income, enhancing nutrient recycling, strengthening resource-use efficiency, and increasing the resilience of farming systems in flood-prone ecosystems of Bihar. Continued monitoring and refinement of the integrated system are expected to further improve sustainability, productivity, and profitability for smallholder farmers in the region.



Fig.8. Glimpses of Poultry-Fish-Horti model

Delineation and characterization of flood-prone and waterlogged areas of Eastern India and development of IFS plans

Principal Investigator: Dr. Koushik Banerjee

Co- Investigators: Dr. Shreya Nivesh (up to Sep 2025), Er. Vikas Paradkar, Dr. Ravi Kumar, Dr. S.K. Purbey

Project Code No.: NRMAMGIFRISIL202100400015

Mapping of flood prone (2017-2024) areas of Eastern India was done using Sentinel-1 Synthetic Aperture Radar (SAR) GRD: C-band image data. Pre and post flood images (VV and VH) were acquired at a spatial resolution of 10m, and interferometric width swath (IW) was used for mapping the flood prone areas following protocol provided by UN-SPIDER in Google Earth Engine (GEE) and ArcGIS (v10.8.2) environment. An adaptive thresholding approach based on Otsu's method was employed to objectively separate flooded and non-flooded pixels. Otsu's algorithm determines the optimal threshold by maximizing the between-class variance of the ratio image histogram, thereby minimizing within-class variance between the two classes. To improve threshold stability and reduce the influence of extreme values and SAR noise, the ratio image was constrained to a physically meaningful range of 0.7–1.3 prior to histogram analysis. The threshold value was computed independently for each district and flood event, allowing the classification to adapt to local environmental and backscatter conditions. Most thresholds concentrated around 0.8–1.0. Pixels exhibiting ratio values below the optimized threshold were classified as flooded. Additional masking procedures were applied to exclude permanent water bodies using the JRC Global Surface Water dataset, areas with slopes greater than 5% derived from HydroSHEDS DEM, and isolated pixel clusters through connected-pixel filtering. The final flood extent map was then used to estimate district-wise flood-affected area.

The study estimated that approximately 9.56-22.09 Lakh ha area in Bihar, as flood prone across 2017-2024. In East Champaran, both northern and southern areas, particularly along the Gandak basin, were affected. The spatial distribution of ground information points across 30 villages and 13 blocks of East Champaran, Sheohar, and Sitamarhi districts reflects a systematic effort to capture the diverse hydro-ecological and socio-environmental conditions that shape flood and waterlogging dynamics in the region. The spatial distribution of ground information points across 30 villages and 13 blocks of East Champaran, Sheohar, and Sitamarhi districts reflects a systematic effort to capture the diverse hydro-ecological and socio-environmental conditions that shape flood and waterlogging dynamics in the region (Fig 9). Flood-affected areas in East Champaran, Sheohar, and Sitamarhi (Gandak, Bagmati, Budhi Gandak river basins) were surveyed for ground-truthing. Flooding is severe during July–August/ September, with water depth reaching 10–15 ft areas near to rivers and 4–5 ft in other areas lasting 3–4 months. In East Champaran, blocks such as Madhuban, Pakri Dayal, and Patahi consistently experience some of the highest waterlogging depths, with maximum recorded inundation reaching up to 12–15 feet, indicating their proximity to low-lying depressions and channel overflow zones. These high-depth areas often coincide with prolonged stagnation, with water persisting for 10–15 days during peak monsoon events. Conversely, blocks like Banjariya and Chiraia show relatively moderate depths, generally around 4–8 feet, though water tends to remain for almost a week, pointing to poor drainage but comparatively less severe flooding pressure. The Sheohar region, despite its smaller geographic spread, displays acute waterlogging impacts, particularly in flood-prone pockets adjacent to the Bagmati river system. Field observations indicate water depths reaching 8–12 feet in the worst-affected

villages, with water stagnation continuing for nearly 10–12 days. This prolonged retention can be attributed to extremely flat topography, fine-textured soils, and inadequate natural drainage channels, all of which slow down the recession of floodwaters. Sitamarhi shows a pattern of moderate but widespread waterlogging, where depths typically range between 3–7 feet; however, the persistence of water for 7–11 days suggests a chronic drainage challenge, especially in panchayats located near old paleo-channels and silted distributaries.

Farmers of the area where waterlogging due to flooding is much persistent, developed integrated farming system models which is providing good economic returns to them. In Dhekhan Sattarghat (Kesariya Block), a 40-bigha Wheat-Paddy-Sugarcane-Fish-Dairy model with a 3.5-bigha fish pond generated nearly ₹10 lakh annually. Smallholder Rice-Goat-Banana systems in Kunwar Dhekahn provided ₹30,000–40,000 annual income from only 5 katha land. Poultry-Fish-Crop systems in Dumri Katsari yielded gross returns of ₹3.5 lakh with net returns exceeding ₹85,000 annually. Intensive prawn-based aquaculture at Nanhkar generated nearly ₹15 lakh net income per year. Similarly, diversified Fish-Duck-Goat-Crop models in Tetariya produced ₹1–1.5 lakh annually. This information, as obtained through survey, demonstrated improved resource-use efficiency, income diversification, nutrient recycling, and enhanced climate resilience in flood-affected regions. The mapped locations reinforce that such systems are not isolated experiments but part of a broader landscape-driven strategy to transform flood-prone agriculture into a productive, diversified, and economically viable livelihood system.

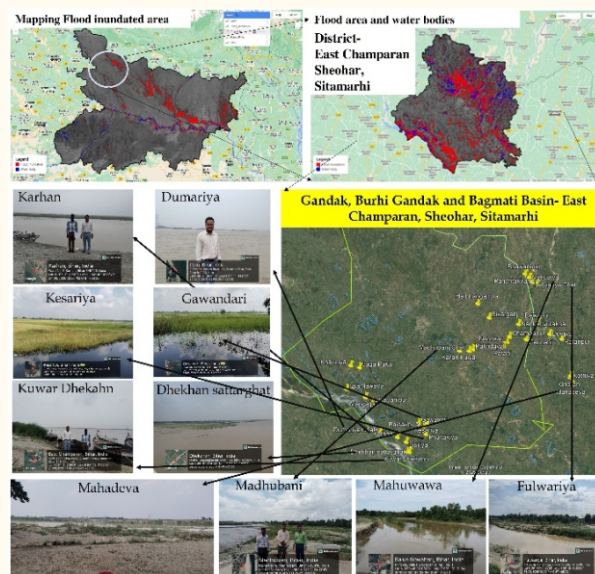


Fig.9. Ground information collections and IFS observations in flood-prone areas of East Champaran, Sheohar and Sitamarhi.

Development of eco-friendly management for major insect pests and diseases of important crops in water congested ecosystem of North-Bihar

Principal Investigator: Dr. Naveenkumar B. Patil (from June, 2025), Mrs. Haritha Mohan M. (up to 20 June 2025)

Co- Investigators: Dr. Jadhav Amol Kailas, Dr. S.K. Purbey, Dr. V.S. Meena

Project Code No.: NRMAMGIFRISIL202400200018

Many biotic stresses invade the crops during cultivation. Hence, we have conducted an extensive survey in two flood prone districts of Bihar, i.e Darbhanga and Muzaffarpur. The survey on insect pests and diseases of major crops in Darbhanga district of Bihar highlights the serious challenges faced by farmers due to the region's humid climate, fertile alluvial soil, and frequent flooding. These environmental and agronomic conditions create a favorable situation for the rapid multiplication and spread of insect pests and plant diseases, leading to significant crop losses. Whereas, the survey on insect pests and diseases of major crops in Muzaffarpur district, Bihar, reveals that the region's subtropical climate, high humidity, and fertile alluvial soil support

intensive agriculture but also favor the development of various pests and diseases.

To manage the major pests, botanicals based Dashaparni ark was tested against various insect pests and diseases in field condition on three major vegetable crops such as cauliflower, brinjal and bhindi. The field experiment consists of three treatments each in four replications. The treatments are T₁-5% dashaparni, T₂-10% dashaparni, Control T₃- 0% dashaparni. The treatments were randomized in the block. Dashaparni Ark application on Bhindi significantly improved plant height and yield. Among the treatments, the 10% concentration resulted in the maximum plant height (141.25 cm), followed by 5% concentration (132.00 cm). Similarly, the yield of bhindi was also positively influenced by the application of Dashaparni Ark. The highest yield was recorded in plants treated with 10% solution (388.25 g plant⁻¹), followed by 5% treatment (334.25 g plant⁻¹), while the control plot showed the lowest yield (258.25 g plant⁻¹). The increase in yield and plant height can be attributed to improved plant health, enhanced nutrient uptake, and effective control of pests due to the bioactive compounds of Dashaparni Ark. The application of Dashaparni Ark on Brinjal significantly improved plant height compared to the control treatment. Among the treatments, the 10% concentration resulted in the maximum plant height (84.25 cm), followed by 5% concentration (75.00 cm). Similarly, the yield of brinjal was also positively influenced by the application of Dashaparni Ark. The highest yield was recorded in plants treated with 10% solution (11.83 Kg plant⁻¹), followed by 5% treatment (10.90 Kg plant⁻¹), while the control plot showed the lowest yield (8.50 Kg plant⁻¹). The increase in yield and plant height of brinjal can be attributed to improved plant health, enhanced nutrient uptake, and effective control of pests due to the bioactive compounds present in Dashaparni Ark.

The results indicated that Dashaparni Ark had no significant effect on plant height and root length of Cauliflower. However, the application of Dashaparni Ark significantly improved plant biomass. Among the treatments, the 10% concentration resulted in the maximum plant biomass (648.69 g plant⁻¹), followed by 5% concentration (587.36 g plant⁻¹). Increased biomass reflects better overall growth, which can be attributed to improved physiological processes, reduced pest attack, and enhanced nutrient uptake. The flower (curd) weight of cauliflower was also positively influenced by the application of Dashaparni Ark. The highest curd weight was recorded in the 10% treatment (331.33 g plant⁻¹), indicating better development and compactness of the curd. Overall, the study revealed that Dashaparni Ark (10%) is an effective organic input for improving growth and yield parameters in cauliflower, brinjal and bhindi. In conclusion, Dashaparni Ark (10%) can be recommended as an eco-friendly and sustainable alternative to chemical inputs in cauliflower, brinjal and bhindi cultivation.

Constraint analysis and performance evaluation of poultry birds reared under backyard system in East Champaran district of Bihar

Principal Investigator: Dr. P.K. Bharti

Co- Investigators: Dr. Ravi Kumar, Mr. Rakesh N.

Project Code No.: NRMAMGIFRISIL202000800011

The rural poultry production in East Champaran district is mainly practiced as Backyard poultry production system (BYPS). The project was aimed to find out the basic information, present status, constraints of backyard system and management intervention to enhance production performance at farmer's field. A total of 600 respondents were covered for survey from all 6 subdivisions and 27 blocks of East Champaran district of Bihar. The family size was grouped as i) up to 6 members: 55.8 % and ii) above 6: 44.2%, respectively. The family size up to 6 members was recorded highest in

Chakia subdivision, followed by Areraj, Dhaka, Pakridayal and Raxaul. The most of the respondents were male 54.16% and rest 45.83% female. The annual income of farmers from poultry was categorized as less than ₹5000 year⁻¹ (59.66%), ₹5,000 to 10,000 (28.16%) and above ₹10,000 (12.16%) based on number/frequency (in parenthesis). The highest proportion of low-income group was observed in Areraj (70%), Chakia (65%), Motihari Sadar (62%), Raxaul (58%), Pakridayal (55%), Dhaka (48%). The five major constraints were lack of scientific knowledge, high mortality rate, lack of improved poultry germplasm, attack by predators and high feed cost etc. Some intervention at farmer's field was carried out to reduce losses and enhance income. Three groups/treatments viz. control: local poultry, non-descript bird and no capacity building; T-1: local and non-descript bird with capacity building; T-2: Improved Vanraja, dual purpose variety with capacity building. Three subdivisions viz. Areraj, Chakia and Motihari Sadar were selected for intervention. The mortality was significantly ($p < 0.05$) lower in T1 (23.1%) and T2 (19.37%) than control (12.2%). Study on layer birds still continued. The average live weight at first laying (gram) was 1489 in Control, 1553 in T-1 and 1683 in T-2. The respective live weight at last or finishing of laying cycle was 2948 g, 3076 g and 3356g, respectively. The body weight in T2 was significantly ($p < 0.05$) higher than control and T1. The poultry bird with improved germplasm and capacity building had better performance in field condition.

Assessment of natural farming in rice-wheat cropping system in North Bihar conditions

Principal Investigator: Dr. P.K. Bharti

Co- Investigators: Dr. S.K. Singh, Dr. V.S. Meena

Project Code No.: NRMAMGIFRISIL202200100016

The experiment on natural farming was conducted in rice-wheat cropping system at the institute. The treatments were T1: conventional

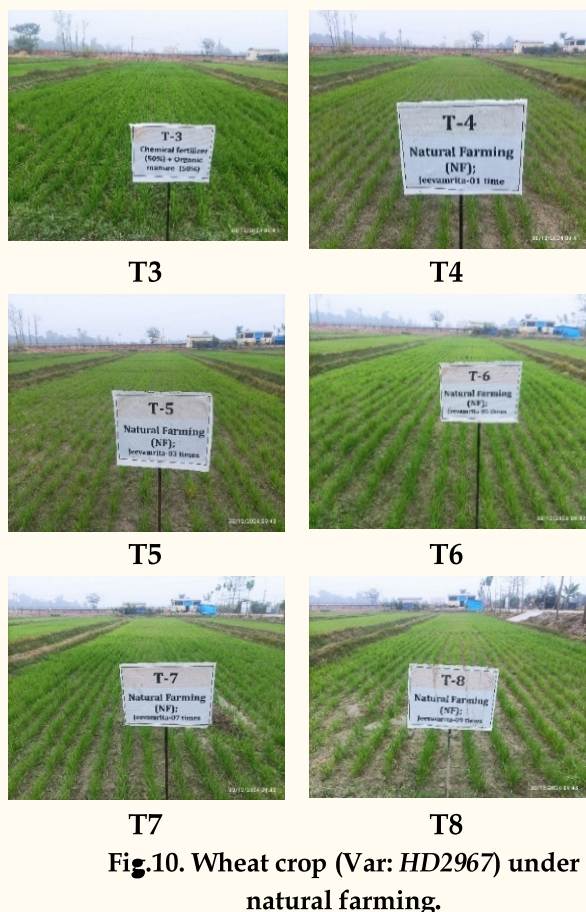
or chemical farming, T2: Organic farming (based on use of Farm Yard Manure i.e. FYM), T3: semi conventional farming (50% nutrients given through chemical fertilizer and 50% through FYM) and T4: natural farming (in this treatment, there was no use of any chemical fertilizer/FYM, however Bijamrita and Jeevamrit was applied for seed treatment and during the standing crop only once), T5: natural farming similar to T4, except the frequency of Jivamrit was 3 times in standing crop, T6: natural farming with 5 times Jivamrit, T7: natural farming with 7 times Jivamrit and T8: natural farming with 9 times Jivamrit. The Bijamrita was used in only once in all natural farming (T4 to T8). In Rabi season HD 2967 wheat variety was cultivated in all the treatments (Fig 10). The yield of wheat (kg ha^{-1}) in T1, T2, T3, T4, T5, T6, T7, T8 was 1066 ± 142 , 1082 ± 62 , 937 ± 130 , 564 ± 47 , 605 ± 87 , 515 ± 49 , 768 ± 86 and $802 \pm 71 \text{ kg ha}^{-1}$. The yield was in natural farming treatment T7 and T9 was comparable with Chemical and FYM based farming (Fig 11). Paddy (variety- MTU7029) was cultivated during the *kharif* whereas wheat was cultivated in *rabi* season. The yield of paddy grain (kg ha^{-1}) in T1, T2, T3, T4, T5, T6, T7, T8 was 3198, 2242, 3184, 962, 1050, 1090, 1080 and 1100, respectively. The total biological yield (kg ha^{-1}) for the respective treatments were 7150, 6176, 8790, 3340, 3376, 3230, 3270 and 3280, respectively (Fig 10 & 11). The harvest index for paddy for T1, T2 and T3 was 44.8, 41.4 and 44.9, respectively, however for natural farming treatment it ranged from 19.5 to 21.3 only. The crop duration of paddy was 127 days.



T1



T2



Design and development of low-cost equipment's and machineries for water logged situations

Principal Investigator: **Er. Vikas Paradkar**
Co- Investigators: **Dr. Ravi Kumar, Dr. Shreya Nivesh (up to Sep 2025)**
Project Code No.: **NRMAMGIFRISIL202100300014**

Design and development of an IoT-based real-time pond water quality monitoring system

Aquaculture productivity and fish health are highly dependent on maintaining suitable pond water quality parameters such as pH, dissolved oxygen, temperature, turbidity, and methane concentration. Conventional water quality monitoring methods mainly rely on manual sampling and laboratory analysis, which are time-consuming, labor-intensive, and unable to provide continuous real-time monitoring. To overcome these limitations, an IoT-based real-time pond water quality monitoring system was designed and developed for aquaculture applications.

The developed system consists of sensing, processing, communication, and user interface modules. Multiple sensors including pH, dissolved oxygen, methane (MQ-4), temperature (DS18B20), and turbidity sensors were integrated with an ESP32 microcontroller. The ESP32 was selected due to its built-in Wi-Fi capability, low power consumption, compact size, and cost-effectiveness. A 16×2 LCD display was also incorporated for local real-time parameter visualization (Fig 12).

The firmware was developed using Arduino IDE for sensor data acquisition, calibration, data filtering, LCD interfacing, Wi-Fi communication, and cloud connectivity. The collected data were transmitted to the Thing Speak cloud platform using HTTP/MQTT protocols for remote monitoring, graphical visualization, and historical data analysis. The entire prototype was assembled on a custom PCB and enclosed in a waterproof housing suitable for field deployment in pond environments (Fig 13).

The developed system successfully monitored all selected water quality parameters continuously and transmitted real-time data reliably to the cloud platform under stable Wi-Fi conditions. The system demonstrated low data latency, stable sensor response, and efficient remote monitoring capability.

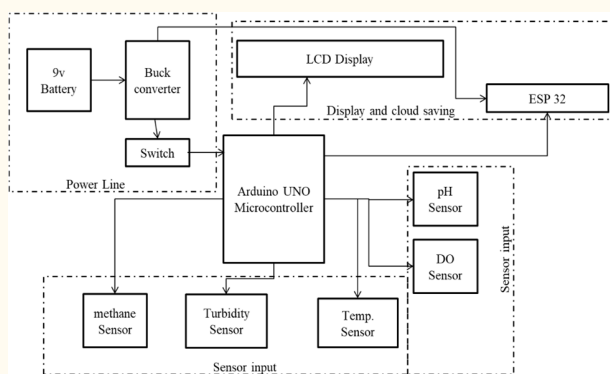


Fig.12. Signal flow diagram.

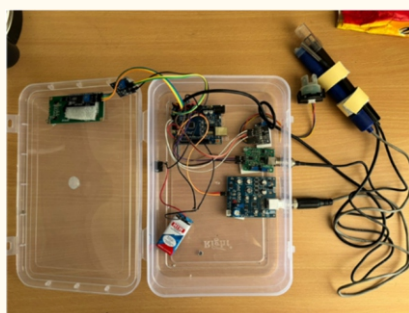


Fig.13. Developed system.

The study concluded that the developed IoT-based monitoring system is reliable, economical, and suitable for smart aquaculture applications. The technology can support fish farmers by enabling continuous environmental

monitoring, improving water management practices, and assisting in timely decision-making for enhanced aquaculture productivity.

Multidimensional study on the impact of flood and waterlogging on farmers livelihood, animal health and adaptation strategies followed in selected districts of Bihar.

Principal Investigator: Dr. N.M. Patnaik

Co- Investigators: Mr. Rakesh N, Dr. Geeta (up to 20 June 2025), Dr. V.S. Meena

Project Code No.: NRMAMGIFRISIL202400500021

Impact of Flood and Waterlogging on Farmers

During this period, data collection was taken up in East Champaran and Darbhanga districts with 480 respondents on impact of flood and waterlogging and extent of adoption of the strategies.

A perusal of Table-2 and Fig.14 presents a comparative picture between East Champaran and darbhanga districts of Bihar with respect to impact of flood and waterlogging in respective districts. Fifteen impact indicators are considered to evoke response from 480 respondent farmers. Indicators like crop production & productivity loss, Water borne diseases and unavailability of clean drinking water impacted more than 50% respondents under control group that comprised farmers who were not directly affected by flood and water logging in East Champaran district. Whereas, indicators like crop production & productivity loss, reduced milk yield, unavailability of fodder and education affected more than 75% of respondent farmers in the district who were directly affected by flood and water logging. In the severely flood affected Darbhanga district, no indicators affected more than 50% of farmers under control group. Whereas, indicators namely crop production & productivity loss, incidence of diseases & pests in crops, reduced milk yield, reproductive issues, unavailability

of fodder, disease incidence in animals and education affected more than 80% of respondent farmers in the district who were directly affected by flood and water logging. Thus, the indicators like crop production & productivity loss, reduced milk yield, unavailability of fodder and Education are common in both the flood affected districts that can be crucial for impact assessment studies in future in similar ecosystems.

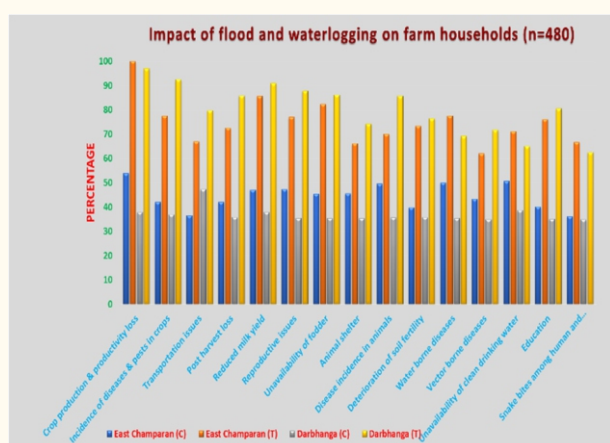


Fig.14. Impact of flood and waterlogging on farmers of East Champaran and Darbhanga (n=480)

Depiction of Fig.15 is regarding the farmers affected by flood and waterlogging were presented with flood related adaptation strategies. However, variations with respect to knowledge about adaptation strategies were observed across both the districts. Respondent farmers from darbhanga (n=120) had better knowledge in the strategies like cultivation of climate resilient varieties, contingent planning, crop diversification and crop/livestock insurance. While farmers from East Champaran (n=120) exhibited a better knowledge level in the strategies like adoption of Integrated Farming System, land shaping and land modification, storage of fodder and cultivation of millets. It was observed that respondents in both the flood affected districts East Champaran and Darbhanga were having below average (less than 50%) knowledge. Thus, the need for channelizing more knowledge and awareness campaigns in such areas becomes pertinent to timely help the farmers from the severity of flood.

Table.2. Impact of flood and waterlogging on farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Impact Indicators	East Champaran (%)		Darbhanga (%)	
		Control	Treatment	Control	Treatment
1	Crop production & productivity loss	53.89	100.00	37.78	96.94
2	Incidence of diseases & pests in crops	41.94	77.50	36.94	92.50
3	Transportation issues	36.39	66.94	47.22	79.72
4	Post harvest loss	41.94	72.50	35.83	85.83
5	Reduced milk yield	46.94	85.56	37.78	90.83
6	Reproductive issues	47.22	76.94	35.28	87.78
7	Unavailability of fodder	45.28	82.22	35.28	86.11
8	Animal shelter	45.56	66.11	35.28	74.17
9	Disease incidence in animals	49.44	70.00	35.56	85.56
10	Deterioration of soil fertility	39.72	73.33	35.83	76.39
11	Water borne diseases	50.00	77.50	35.28	69.17
12	Vector borne diseases	43.33	61.94	34.72	71.67
13	Unavailability of clean drinking water	50.56	71.11	38.61	65.00
14	Education	40.00	76.11	35.00	80.56
15	Snake bites among human and animals	36.11	66.67	34.72	62.50

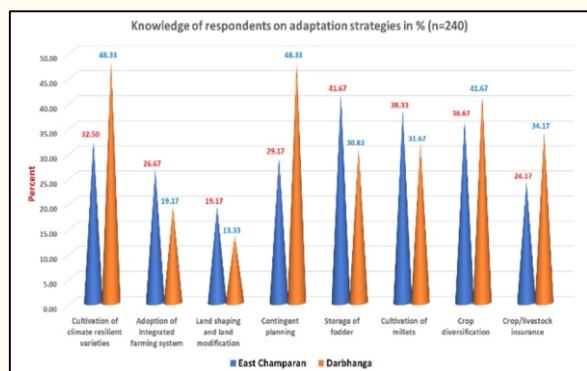


Fig.15. Knowledge of respondents of East Champaran and Darbhanga on adaptation strategies (n=240)

Extent of Adoption of Adaptation Strategies

The Table 3 depicts the extent of adoption of adaptation strategies in East Champaran and Darbhanga districts. In both the districts, very poor adoption of adaptation strategies was exhibited. Strategies like Storage of fodder in concentrate form, cultivation of millets, borrowing loans from formal/informal sector were few that had relatively better (30%) adoption in East Champaran district and the strategies like contingent planning, borrowing loans from formal/informal sector were only two strategies that had a relatively better adoption.

Table.3. Extent of Adoption of Adaptation Strategies (n=240)

Sl. No.	Adaptation Strategies	East Champaran (%)	Darbhangha (%)
1.	Cultivation of climate resilient varieties	19.17	26.67
2.	Adoption of Integrated farming system	10.83	10.83
3.	Land shaping and land modification	12.50	7.50
4.	Contingent planning	21.67	35.83
5.	Storage of fodder in concentrate form	31.67	26.67
6.	Cultivation of millets	30.00	20.83

7.	Crop diversification	10.00	27.50
8.	Crop/livestock insurance	9.17	25.00
9.	Looking for non-farm income sources	20.00	24.17
10.	Reduced expenditure in social functions	22.50	26.67
11.	Borrowing loans from formal/informal sector	31.67	36.67
12.	Exploring participation in farmer co-operatives etc.	13.33	12.50

Adoption Categorization of farmers in the study area

It was evident that farmer respondents in East Champaran (n=120) had a better adoption of adaptation strategies than farmers in Darbhanga district (n=120). Majority of farmers in both the districts were in the medium adoption range (52.50% in Darbhanga and 56.67% in East Champaran). However, 31.67% farmers in Darbhanga district were in high adoption category whereas 16.67% farmers from East Champaran were in this category. A skewed distribution of adoption in Darbhanga for only two pertinent adaptation strategies indicates other adaptation strategies could not scale up to the expectations of researchers to make that impact on farmers to adopt such strategies in the advent of flood and water logging thus making them less sustainable to such climatic calamities. Whereas, a slightly better distribution of adoption across various adaptation strategies in East Champaran indicates a lesser vulnerability of the district from flood and water logging compared to Darbhanga. This is due to continuous training and different extension activities of ICAR-MGIFRI to tackle flood and waterlogging issues (Fig 16).

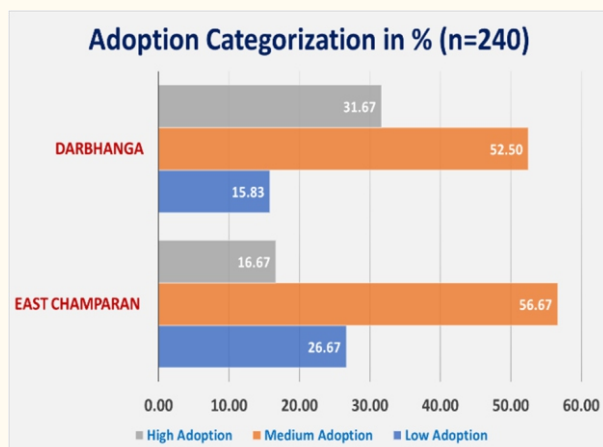


Fig.16. Categorization of adopter farmers adaptation strategies of East Champaran and Darbhanga (n=240)

Livelihood capitals possessed by farmers in the study area

According to the Department for International Development (DFID) of the

British government, the SLA framework has been developed to help understand and analyse the livelihoods of the poor. The framework can be used in planning new development activities and assessing the contribution of livelihood sustainability made by existing activities (DFID, 2000) flood and waterlogged regions of Bihar. The central idea of SLA is that sustainability of livelihood *strategies* of individuals or households depends on access, use, and development of different types of *assets* (Fig 17).

Human Capital

The skills, knowledge, ability to labour and good health and physical capability important for the successful pursuit of different livelihood strategies (Table 4).

Table.4. Human capital possessed by farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Variables	Category	East Champaran		Darbhanga	
			Control	Treatment	Control	Treatment
1.	Age	In years	48.40	49.35	49.29	52.34
2.	Farming Experience	In years	22.59	20.07	20.65	20.43
3.	Gender	Male	91.67	90.83	74.16	81.66
		Female	8.33	9.16	25.84	18.33
4.	Education	Illiterate	25.83	16.66	10.00	22.50
		Primary	30.00	50.00	52.50	22.50
		Middle	16.66	22.5	20.83	34.16
		Secondary	19.16	8.33	10.83	20.83
		Senior Secondary	8.33	2.50	5.83	0
		Graduate & above	25.83	0	0	22.50
5.	Family Type	Joint	80.83	20.83	28.33	28.33
		Nuclear	19.16	79.16	71.66	71.67
6.	Family Size	Mean	6.55	6.81	6.15	7.62
7.	Training received	Yes	28.33	27.50	34.16	35.00
		No	71.66	72.50	65.83	65.00

Natural Capital

The natural resource stocks (soil, water, air, genetic resources etc.) and environmental services from which resource flows and services useful for livelihoods are derived (Table 5).

Table.5. Natural capital possessed by farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Variables	Category	East Champaran		Darbhanga	
			Control	Treatment	Control	Treatment
1.	Land holding	In acres	2.16	2.69	2.67	3.11
2.	Irrigation	Yes	75.00	68.33	69.16	55.00
		No	25.00	31.66	30.83	45.00
3.	Standard Animal Unit	mean	2.58	2.01	2.08	2.77
4.	Crop Diversification	Index value	0.46	0.41	0.52	0.42

Social Capital

The social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions (Table 6).

Table.6. Social capital possessed by farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Variables	Category	East Champaran		Darbhanga	
			Control	Treatment	Control	Treatment
1.	Extension Contact	Low	72.50	85.00	72.50	75.00
		Medium	19.16	10.83	19.16	19.16
		High	8.33	4.16	8.33	5.83
2.	Assistance external agency	Low	56.66	82.50	56.66	63.33
		Medium	32.50	17.50	32.50	36.66
		High	10.83	0	10.83	0
3.	Digital tools usage	Low	8.33	75.00	8.33	45.00
		Medium	78.33	15.00	78.33	55.00
		High	13.33	10.00	13.33	0
4.	Social network	Low	71.66	76.66	71.66	62.50
		Medium	16.66	15.83	16.66	29.16
		High	11.66	7.50	11.66	8.33
5.	Social Migration	Yes	75.00	50.83	70.83	63.33
		No	25.00	49.16	29.16	36.66

Financial Capital

The capital base (cash, credit/debt, savings, and other economic assets which are essential for the pursuit of any livelihood strategy (Table 7).

Table.7. Financial capital possessed by farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Variables	Category	East Champaran		Darbhanga	
			Control	Treatment	Control	Treatment
1.	Annual Income	<1 lakh	13.33	18.33	21.66	25.00
		1-2.5 lakh	75.83	74.16	52.50	62.50
		2.5-5.0 lakh	6.66	7.50	22.50	10.83
		> 5.0 lakh	4.16	0	3.33	1.66
2.	Saving habit	Yes	38.33	35.83	30.83	45.83
		No	61.66	64.16	69.16	54.16
3.	Credit availability	Yes	26.66	45.83	35.83	41.66
		No	73.33	54.16	64.16	58.33
4.	Social safety net	Yes	65.83	80.00	77.50	71.66
		No	34.16	20.00	22.50	28.33

Physical Capital

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are the tools and equipment that people use to function more productively (Table 8).

Table.8. Physical capital possessed by farmers of East Champaran and Darbhanga (n=480)

Sl. No.	Variables	Category	East Champaran		Darbhanga	
			Control	Treatment	Control	Treatment
1.	House structure	Kuccha	8.33	35.83	18.33	15.83
		Mixed	65.83	41.66	61.66	71.66
		Pucca	25.83	22.50	20.00	12.50
2.	Road connectivity	Poor	21.66	52.50	25.83	46.66
		Average	55.83	35.83	23.33	43.33
		Good	22.50	11.66	50.83	10.00
3.	Electricity	Poor	15.83	25.83	27.50	45.00
		Average	69.16	60.00	60.83	40.00
		Good	15.00	14.16	11.66	15.00
4.	Market availabilty	Poor	48.33	75.00	65.00	54.16
		Average	30.00	20.83	29.16	33.33
		Good	21.66	4.16	5.83	12.50
5.	Farm and home Implements	Poor	58.33	68.33	28.33	59.16
		Average	20.00	24.16	48.33	30.83
		Good	21.66	7.50	23.33	10.00



Fig.17. Glimpses of data collection at Darbhanga and East Champaran

Soil health driven cropping system design and resource efficient planting strategies for sustainable intensification in waterlogged ecosystem of Eastern India.

Principal Investigator: Dr. V.S. Meena
Co- Investigators: Dr. S. Mukherjee,
Dr. K. Banerjee, Dr. S.K. Purbey

The project was initiated in June 2025 with establishment of field experiments under eleven cropping system scenarios involving different planting techniques such as DSR, transplanted rice (TPR), zero tillage (ZT), ridge bed planting (RBP), and conventional tillage (CT) under diverse crop sequences. The systems included rice-wheat-mungbean, finger millet-mustard-sesbania, maize-wheat-vegetables, soybean-mustard-vegetables, pearl millet-based systems, and rice-maize rotations.

During the first observation year, DSR rice recorded a grain yield of 3340 kg ha⁻¹, which was about 28% higher than transplanted rice (2600 kg ha⁻¹). Maize was utilized as green fodder rather than grain. Across systems, ZT-based and integrated rotations showed comparatively better early performance in biomass accumulation and resource efficiency indicators. The treatments CS₁-CS₁₁ are under evaluation, with DSR- and ZT-based systems showing early yield advantage of 18-30% over conventional transplanted and broadcast systems. Soybean-based systems demonstrated moderate productivity stability, while pearl millet systems showed lower but stable yield under waterlogged conditions. This first year served as a baseline observation trial to standardize management practices, with no statistical inference intended. In subsequent years, replicated trials will quantify yield advantage, percentage improvement, soil health changes, and sustainability indices across all cropping system scenarios under waterlogged agro-ecologies.

Development of organic rice-fish-duck IFS model in waterlogging situations of North Bihar

Principal Investigator: Dr. S.K. Singh
Co- Investigators: Dr. Ravi Kumar, Dr. S. Nivesh
(up to April 2025)
Project Code No.: NRMAMGIFRISIL202100200013

Ensuring food and nutritional security in waterlogged conditions is challenging but feasible through integrated farming. An on-farm experiment on an organic rice-fish-duck system showed higher rice yields with organic and combined nutrient sources. Organic nutrient application improved soil organic carbon, highlighting its sustainability benefits.

In North Bihar, approximately 76% of the land is flood-affected, resulting in significant waterlogging of cultivable lands. Managing these conditions is challenging, but it can be turned into an opportunity through integrated farming systems and organic cultivation of crops and fish, enhancing food and nutrition security for farmers. Field experiment conducted for evaluation of organic rice culture to develop organic rice-fish-duck IFS model revealed that inorganic sources of nutrients gave higher grain yield for wheat, maize, mustard, and rice compared to organic sources. However, lentil crops showed comparable yields across organic, inorganic, and mixed nutrient sources. Notably, soil organic carbon and moisture content at rice harvest were higher in plots using organic nutrients. Green manuring with Sesbania in-situ and Gliricidia leaves ex-situ (grown on dykes) was employed as organic nutrient sources (Fig 18, 19, 20).

During the study period, nine fish refuges were established and stocked @ 4000 ha⁻¹ with advance fingerlings of rohu, catla, mrigal, and common carp. Field experiments with wheat and rice under organic, organic + inorganic, and inorganic nutrient management systems were successfully completed (Fig 21, 22). Wheat grain yield was highest under

inorganic nutrient application (4468 kg ha^{-1}), while rice yield ranged from $2450\text{--}2610 \text{ kg ha}^{-1}$. Organic nutrient management significantly improved soil organic carbon, reaching up to 1.17%. On-dyke cultivation of banana, papaya, pomegranate, and gliricidia was successfully maintained, with banana producing 558 dozen fruits. Compost preparation from crop residues was also achieved. Despite severe water scarcity limiting fish-duck integration, the project generated valuable insights on sustainable rice-fish-duck IFS models.



Fig.18. View of wheat crop in research plot of institute



Fig.19. View of paddy crop and integration of Fish in research plot of the institute



Fig.20. View of dyke plantation on research plot of the institute

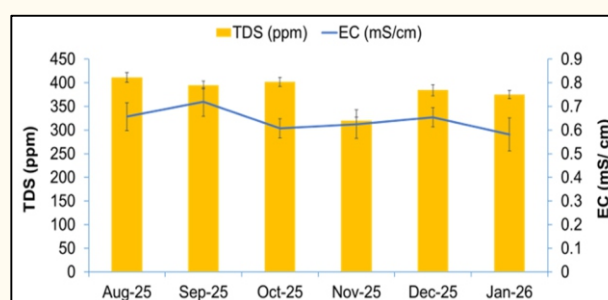
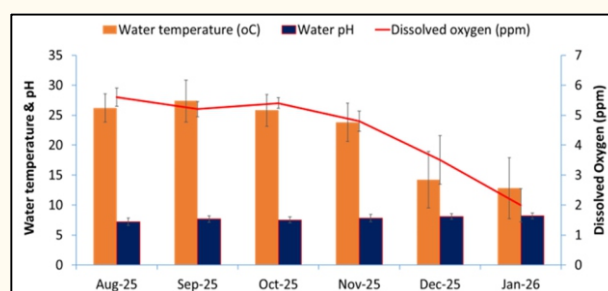


Fig.21. Water quality parameters

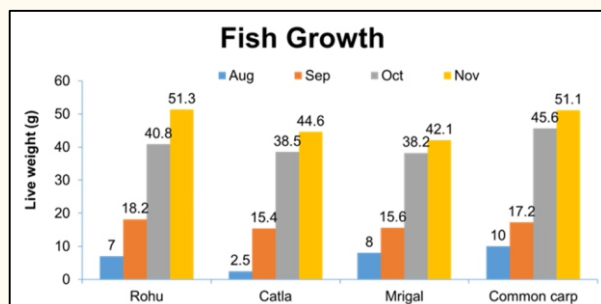


Fig.22. Fish growth.

Evaluation of irrigation water saving techniques in winter Maize in North Bihar conditions.

Principal Investigator: **Dr. Shreya Nivesh**

Co- Investigators: **Er. Vikas Paradkar, Dr. Koushik Banerjee**

Project Code No.: **NRMAMGIFRISIL202100100012**

To address declining groundwater levels and inefficient irrigation practices in North Bihar, the current study developed and validated irrigation strategy for dry season Maize (*Zea mays* L.). Field experiments were conducted over three consecutive years (2021–2024) at ICAR-MGIFRI, Motihari, evaluating maize responses to 15 treatment combinations involving three replications and five irrigation methods: Flat-Flooding (F1); Ridge-Furrow at 15 cm (F2) and 30 cm depth (F3); and Ridge-Alternate Furrow at 15 cm (F4) and 30 cm depth (F5) alongside three irrigation levels (100%, 80%, and 60% of crop evapotranspiration, ETC) arranged in a split-plot design (Fig 23-25). The full irrigation requirement (100% ETC) was scientifically estimated using the FAO-CROPWAT 8.0 model. Across all experimental years (2021-2024) grain yield exhibited a direct linear relationship with irrigation volume, reaching its maximum under the I1 treatment, followed by I2, and reaching its minimum under I3 deficit level (Fig 23,24,25 and 26). F4 consistently produced the highest grain yield irrespective of the irrigation level, achieving maximum average (2021-24) grain yields under I1 (8592.58 kg ha⁻¹), I2 (8317.21 kg ha⁻¹), and I3 (7305.26 kg ha⁻¹), whereas the control method (F1) uniformly recorded the lowest grain yields,

resulting in the absolute lowest pooled yield under the I3F1 treatment. Results revealed that irrigation treatments significantly influenced water productivity (WP) across all years, except during the non-significant (NS) 2021-22 season (Fig 26). The highest WP was not achieved with full irrigation (I1) but was optimized under the moderate deficit regime (I2), where the interaction of I2 x F4 secured the highest average WP (2.66 kg m⁻³), followed closely by I2F5 (2.55 kg m⁻³). Methods F4 and F5 demonstrated superior water conservation performance, with the maximum average water saving of 28.09% achieved under I2F4, closely followed by I2F5 at 27.21%. Hence, the three-year pooled data indicates that while maximum yield requires full irrigation (I1), implementing a moderate irrigation deficit (I2) combined with alternate furrow irrigation (F4, 15 cm depth) serves as the optimal strategy for water-scarce regions by minimizing yield reduction while maximizing both water productivity and water savings (Fig 26).



Fig.23. Flat flooding



Fig.24. Ridge-alternate furrow at 15 cm depth



Fig.25. Ridge-alternate furrow at 30 cm depth

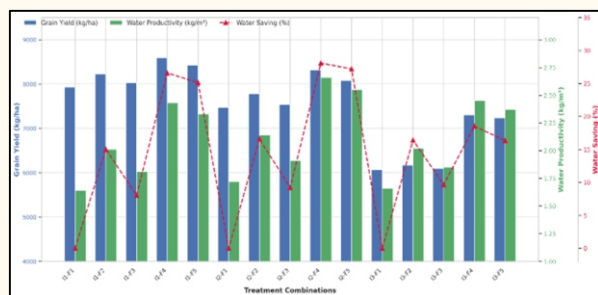


Fig.26. Effects of different irrigation levels and application methods on the three-year (2021-2024) pooled grain yield, water productivity, and water savings of winter (Rabi) maize.

A study on existing farming systems and development of an optimal plan for Flood-prone and Water-logged ecosystems of Eastern India

Principal Investigator: Mr. Rakesh N

Co- Investigators: Dr. N.M. Patnaik, Dr. Geeta (up to 20 June 2025), Dr. Koushik Banerjee

Project Code No.: NRMAMGIFRISIL202400100017

During the year 2024–25, detailed field surveys and data analysis were undertaken under the project on existing farming systems in flood-prone and water-logged ecosystems of Eastern India. The study focused on East Champaran district of Bihar, particular emphasis was given to understanding the economics and resource-use efficiency of paddy cultivation, which is the major crop of the region. About 120 farmers were surveyed across seven blocks of East Champaran. The cost of cultivation analysis across marginal, small, and large farmers revealed that variable costs constituted the major share of total cultivation cost in paddy production. Among all variable cost components, human labour emerged as the most important expenditure component. The average hired labour cost was estimated at ₹17,458 ha⁻¹, while owned labour accounted for ₹7,615 ha⁻¹. Marginal farmers depended more heavily on family labour, incurring ₹10,578 ha⁻¹ towards owned labour, whereas large farmers relied more on hired labour with an expenditure of ₹22,187 ha⁻¹ due

to larger cultivated area and greater labour requirement (Table 9).

Machine labour also formed an important component of cultivation cost. Hired machine labour accounted for ₹6,939 ha⁻¹ overall, while owned machine labour remained comparatively low at ₹641 ha⁻¹, indicating dependence on rented machinery. Expenditure on farmyard manure and chemical fertilizers was estimated at ₹4,829 and ₹4,068 ha⁻¹, respectively. Irrigation cost showed considerable variation among farm categories, with marginal farmers incurring the highest expenditure of ₹4,794 ha⁻¹ compared to ₹1,973 and ₹1,594 ha⁻¹ among small and large farmers, respectively. Threshing and winnowing constituted another major cost component with an overall expenditure of ₹6,029 ha⁻¹. Marginal farmers incurred the highest expenditure under this operation (₹7,582 ha⁻¹), while small and large farmers spent ₹4,146 and ₹4,307 ha⁻¹, respectively. Seed expenditure averaged ₹2,140 ha⁻¹ across all farm categories. The Paddy cultivation was profitable across all categories of farmers, although significant variation existed in costs and returns among marginal, small, and large farmers (Table 10). Marginal farmers incurred a comprehensive cost (Cost C2) of ₹63,161 ha⁻¹ and obtained an average yield of 30.08 q ha⁻¹. Their gross income was estimated at ₹73,760 ha⁻¹, resulting in a net income of ₹10,599 ha⁻¹ with a benefit-cost ratio of 1.17 over total cost. Small farmers incurred a Cost C2 of ₹61,179 ha⁻¹ and realized a yield of 33.42 q ha⁻¹. Their gross income was ₹80,938 ha⁻¹ with a net income of ₹19,760 ha⁻¹ and a B:C ratio of 1.33. Large farmers recorded the highest profitability with a gross income of ₹88,509 ha⁻¹, net income of ₹29,293 ha⁻¹, and a B:C ratio of 1.50.

Table.9. Cost structure in paddy cultivation across different types of farmers

S. No	Cost Items (₹)	Marginal (₹ ha ⁻¹)	Small (₹ ha ⁻¹)	Large (₹ ha ⁻¹)	Overall (₹ ha ⁻¹)
Variable cost					
1.	Human labour				
	a) Owned	10,578	4,772	3,389	7,615
	a) Hired	14,061	20,807	22,187	17,458
2.	Machine Labour				
	a) Owned	0.00	717.06	2,228	641
3.	a) Hired	6,967	8,183	5,309	6,939
4.	Seed	1929	1,871	3,028	2140
5.	FYM	4077	5946	5409	4829
6.	Chemical Fertilizers	3,979	4,242	4,085	4,068
7.	Plant Protection Chemicals	921	1,022	878	938
8.	Irrigation	4,794	1,973	1,594	3,414
9.	Electricity	0.56	11.27	19.36	7.16
10.	Threshing and winnowing	7,582	4,146	4,307	6,029
11.	Interest on working capital	2,740	2,681	2,626	2,702
Fixed cost					
1.	Depreciation	0.00	211	151	85
2.	Rental value of owned land	7,101.33	6,795	6,980	6,998
3.	Interest on fixed capital	710.13	700	713	708

The Tree map analysis (Fig 27) showed that labour accounted for the largest share of cultivation cost across all categories of farmers, ranging from 44.9% among marginal farmers to 49.1% among large farmers. Machine labour constituted the second major cost component, with the highest share observed among small farmers (16.4%), indicating greater dependence on mechanized operations. Marginal farmers incurred relatively higher expenditure on

threshing (13.9%) and irrigation (8.7%), reflecting higher post-harvest and irrigation burden. Farmyard manure also contributed a considerable share to total cultivation cost, particularly among small farmers (11.1%) and large farmers (10.3%). Fertilizer, seed, and plant protection chemicals accounted for comparatively smaller shares in the overall cost structure across all farm categories.

Table.10. Returns structure in paddy cultivation in the study area

Component	Marginal (₹ ha ⁻¹)	Small (₹ ha ⁻¹)	Large (₹ ha ⁻¹)	Overall (₹ ha ⁻¹)
A1 + paid out cost	44,771	48,910	48,133	46,522
A2 + FL (Family Labour)	55,350	53,683	51,523	54,137
B1	56,060	54,383	52,236	54,846
B2	63,161	61,179	59,217	61,844
C1	56,060	54,383	52,236	54,846
C2 - Comprehensive cost	63,161	61,179	59,217	61,844
C2* (C2 + 10%)	69,477	67,297	65,138	68,028
Yield (q ha ⁻¹)	30	33	36	32
Gross Income	73,760	80,938	88,509	78,626
Net Income over OC ($\cong$ A1)	28,989	32,028	40,376	32,104
Net Income over TC ($\cong$ C2)	10,599	19,760	29,293	16,782
B:C Ratio over OC ($\cong$ A1)	1.66	1.68	1.86	1.71
B:C Ratio over TC ($\cong$ C2)	1.17	1.33	1.50	1.28

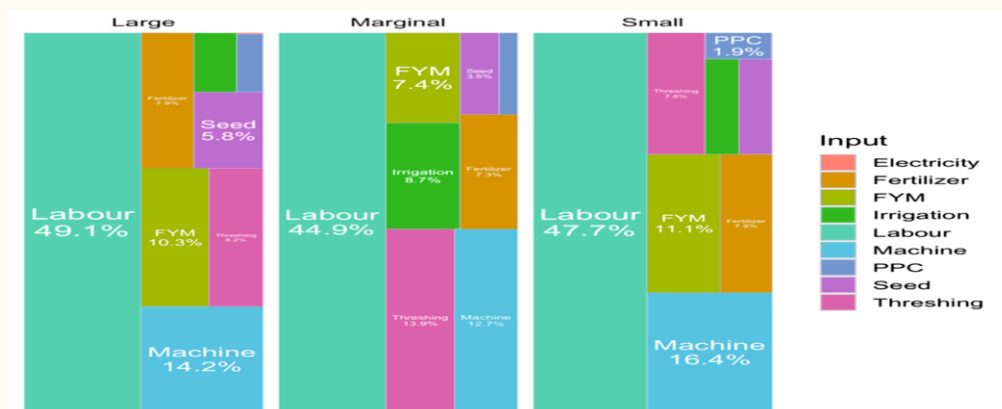


Fig.27. Input share (%) in the total cost of cultivation

The labour utilization pattern showed (Fig.28) that planting (P), harvesting (HR), and weeding management (WM) were the most labour-intensive operations in paddy cultivation across all categories of farmers. Large and small farmers generally utilized higher labour compared to marginal farmers, particularly in planting and harvesting operations. Marginal farmers recorded comparatively higher labour use in threshing and winnowing (TW), indicating greater dependence on manual post-harvest activities. Irrigation (IR) and organic manure application (OM) also required moderate labour use across farm categories. In contrast, fertilizer application (FA) and land preparation (LP) required relatively lower labour input compared to other farm operations.

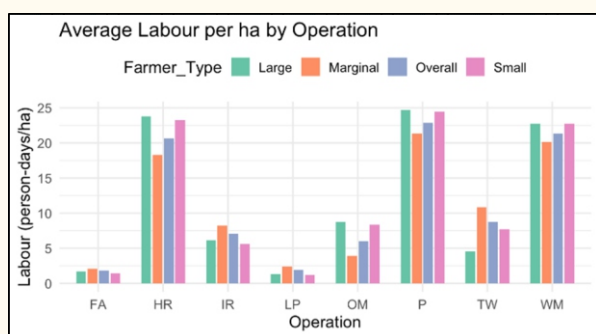


Fig.28. Labour utilization pattern

Labour cost contribution by gender and operation (Fig.29) showed that male labour accounted for a major share of labour cost in operations such as fertilizer application (FA), irrigation (IR), land preparation (LP), and

organic manure application (OM) across all categories of farmers. Female labour contributed more significantly to labour costs in operations such as planting (P), harvesting (HR), threshing and winnowing (TW), and weeding management (WM), reflecting their greater involvement in manual and post-harvest activities. The findings highlight that both male and female labour play complementary roles in paddy cultivation, with female labour contributing substantially to overall labour-intensive farm operations.

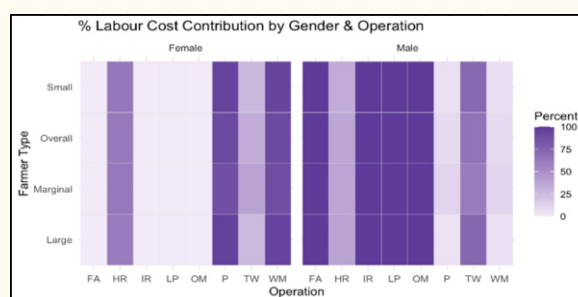


Fig.29. Labour cost contribution by gender and operation.

Land shaping for development of horti-based farming system model for low-lying areas of Bihar

Principal Investigator: Dr. S.K. Purbey
Co- Investigators: Dr. P.K. Bharti, Dr. Jadhav Amol Kailash, Dr. S. Nivesh (up to Sep 2025)
Project Code No.: NRMAMGIFRISIL202000100004

In low-lying areas, water is available near the earth's surface seasonally and remains for 4-5 months even more during good monsoons. This depth of waterlogging is found more during monsoon season, thus, making lands

unproductive during *kharif*. Restoration of such lands is possible through various techniques of land modifications/ shaping. Land shaping techniques have been executed for the rehabilitation of low-lying water-logged areas by converting into raised and sunken bed system. A crop diversification has been implemented under different land shaping systems viz. model I: (1.0 m depth), Model II (1.4 m depth) & Model III (1.8 m depth). During the period of 2025, various component like field crop, vegetables, fruit crops, aquatic crops, fish, goatary were taken. The maximum area under field crops (21%) followed by fruit crops (18-19%) and vegetable crops (10%) under raised bed system. Under sunken bed water chestnut, field crops and vegetable crops were taken as per waterlogging condition and rainfall. Pond liner was used in a pond of each model and fish fingerlings were released in the month of July 2025. So, the economics of these ponds will be done in 2026 report.

Performance of field crops: Finger millet, maize, cucurbits and rice during *kharif* and wheat, mustard and maize during *rabi* (2025) were grown on all models (Fig. 30 and 31). Among all the crops grown during *kharif* the performance of maize (4600 kg ha⁻¹) has been found best followed by finger millets in the models I & II. Sesamum was tried in model I but due to late rain during flowering and fruiting period led to the poor production.



Fig.30. Field crops on raised bed I, II and III during *Kharif* season.

Paddy, fish and water chestnut were grown during *kharif* 2025 in sunken bed but due to erratic rainfall the paddy crop failed in all models (Fig. 31). The performance of water chest nut was also not good due to heavy infestation of leaf beetle. Fish production under pond liner is in progress and growth data has shown that grass carp has maximum growth (250-300g) followed by rohu (200-250g) and Naini (90-120 g) (Fig. 32).





Fig.31. Crops in sunken bed of model I, II and III during kharif season

During rabi season, wheat, pea and mustard were cultivated on model I & II whereas on model III wheat, pea and maize + potato was cultivated. The performance of wheat and pea was found better than potato alone. Whereas at model III the potato + maize combination was found best over other wheat and mustard. The production of wheat in sunken bed of model III was better than raised bed; it might be due to more soil moisture and less production cost under sunken bed. Similarly, the performance of mustard has also been found better under sunken bed as compared to raised bed (Fig. 33 & 34).



Fig.32. Fish production in sunken bed of model I, II and III during kharif season



Fig.33. Crops on raised bed of model I, II and III during rabi season





Fig.34. Crops in sunken beds of model I, II and II during rabi season

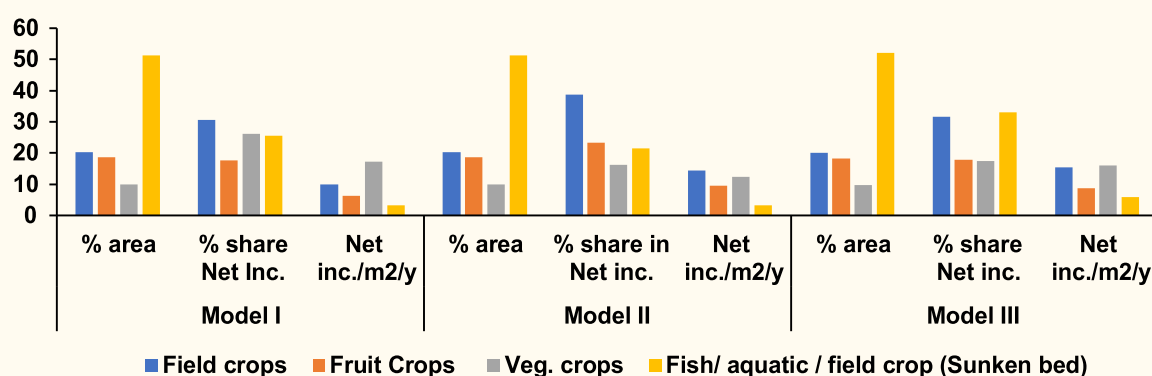
Performance of vegetable crops: Cucurbits during kharif and pea, potato and maize (cob purpose) were grown during rabi season (2025) under all models. The performance of bottle gourds was found best among cucurbits followed by sponge gourd and pea. The percentage share in area of production of this component was minimum (10%) but productivity has been found maximum among all component. The net return per unit area from bottle gourd was ₹18.05 m⁻² followed by sponge gourd (11.80 m⁻²) and pea (9.26 m⁻²).

Performance of fruit crops: The fruit crops were planted at the both edge all raised bed sharing about 20% area. Diversified fruit crops were grown to find out the best combination of

fruit crops for highest economic and nutritional gain. Banana, Guava, bael, drumstick and jamun on model I, Jamun, mango, guava and banana on model II and water apple, mango, custard apple, banana and Ber were grown on model III. The two-tier system of fruit crops has been planted in all the models. The pruned fruit crop biomass was converted into vermicompost and it has been found the banana has given maximum biomass followed by guava and ber. The maximum net return from fruit component has been found under model III due to a greater number of bearing banana plantation and ber fruit crop. Among various fruit crops ber gave the maximum return (₹43 m⁻²). Some of the fruit crops like jamun, custard apple and mango have yet to come in fruiting so the performance of various fruit crops in different models cannot be assessed.

Goat component: Two adult female goats were introduced into the Model-III Integrated Farming System (IFS) during the rabi season. A goat shed unit covering an area of 30 m² and a sunken bed of 250 m² were allocated for the manure pit and open goat enclosure (bara). During the reporting period, the goats produced approximately 35 kg of manure and gave birth to two kids. The goat-rearing component was completely self-sustaining throughout the period.

Economic analysis of various components during 2025-26



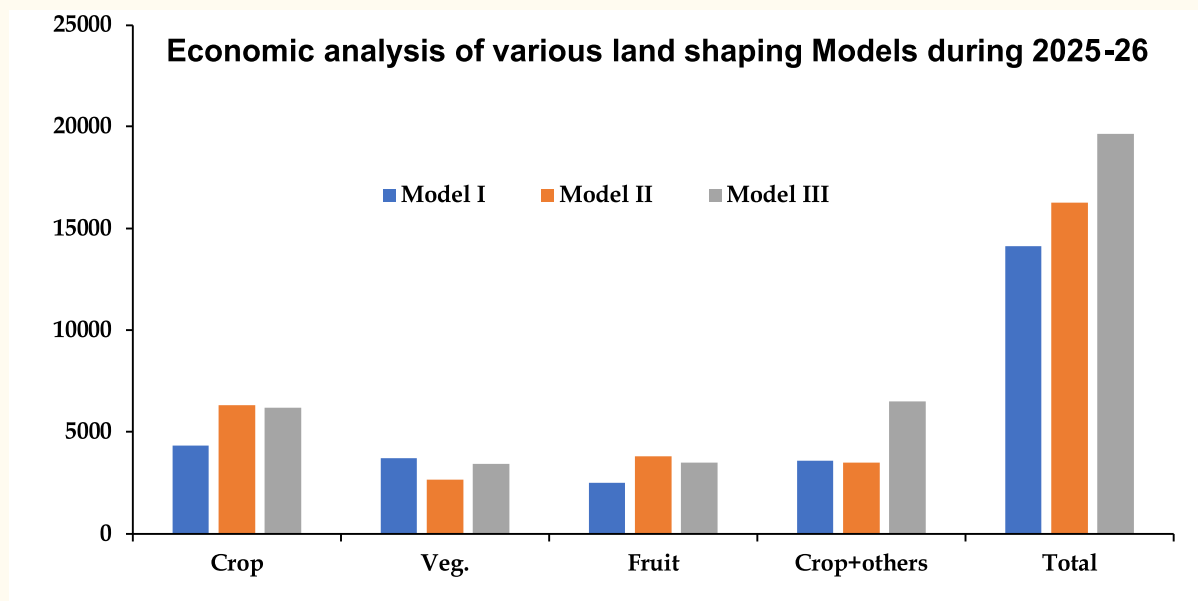


Fig.35. Economic analysis of various land-shaping models

The economic analysis of the various models under this project has been shown in Fig. 35. The significant differences among different models in respect of net return has been observed. The model III gave maximum net return (₹19625) followed by model II and I (Fig. 35). This might be due to better performance of potato + maize cropping than wheat and mustard during rabi season. The model III having more depth (2.0m) led to more water storage during rainy season which ultimately been utilized for better rabi production with less cost of cultivation. It has been also observed that the production of wheat under sunken bed of model III was better than other models which might be due to more soil moisture.

Irrespective of the models, sunken bed share has been kept about 52% but share in net return per unit area has been found minimum (3.2-6%). This might be due to poor water holding capacity of soil and new construction. The field crop share has been found maximum (20%) followed by fruit crop and vegetable crops. Similarly, the highest net return was also observed from field crop (Fig. 35) followed by fruit crops. The maximum net return per unit area has been recorded in vegetables (₹17.25

m⁻²) among various components from the system followed by field crop component (Fig. 35). While analyzing the share of various component in net return it has been found that field crop gave the maximum contribution (31, 39 & 32%) in model I, II and III respectively followed by fruit crops (23 & 18 %) under model II & I respectively. Irrespective of models, it has been recorded that raised bed gave 27-60% more net return as compare to sunken bed.

Fruit crop component share in area was about 19% and in net income it was 18-25% (Fig. 35). However, its share in net income of the models was lowest due to nonbearing stage of some of the fruit crops. It has also been observed that the soil pH has come down to 7.2-7.5 from 8.59-8.7 (initial reading) during 2020-21 similarly organic carbon % has increased from 0.30 to 0.64. This has been also recorded that manure equivalent yield (NPK value) under different models of IFS was 2.5 to 5 time more than non-land shaped conventional farming system. Similarly, the employment generation has also been found double than non-land shaped farming system.

Sailent Research Achievements (ICAR Funded Projects)

Farmers FIRST Programme- Improving livelihood of farmers through good practices in agriculture, fisheries and animal husbandry in the East Champaran region

Principal Investigator: Dr. S.K. Singh

Co- Investigators: Dr. N.M. Patnaik,

Dr. Naveenkumar B. Patil

Project Code No.: NRMAMGIFRICOL202000500008

The project introduced four distinct IFS models integrating crops, livestock, fisheries, and horticulture, significantly enhancing farm productivity, income, and livelihood security. The Fish-Crop-Goat IFS Model, implemented in Ujhilpur and Balbhaddarpur, demonstrated diversified income sources through fish farming, staple crop cultivation (rice, maize, and vegetables), and goat rearing. The Fish-Crop-Goat-Cow IFS Model, adopted in Balbhaddarpur, combined dairy farming with crop and fish production, increasing household nutritional security and income stability. The Fish-Duck-Goat IFS Model, newly introduced in Balbhaddarpur, integrated duck farming with fish culture and goat rearing, offering an innovative approach to resource utilization. The Fish-Crop-Goat-Vermicomposting IFS Model incorporated organic waste recycling through vermicomposting, enhancing ecological sustainability alongside economic gains. These IFS models significantly improved household incomes, with net earnings ranging from ₹1,00,238 ha⁻¹ to ₹4,11,750 ha⁻¹, demonstrating their viability for economic upliftment. Additionally, training programs, input support, and field demonstrations empowered farmers with technical knowledge, fostering self-reliance and climate resilience. The project successfully enhanced livelihood security, food production, and financial stability, proving that integrated approaches are key to transforming subsistence agriculture into a sustainable and profitable enterprise in Bihar.

Under the Farmer FIRST project, below mentioned extension activities were conducted to enhance farmers' knowledge, skills, and decision-making capacities through participatory approaches. These activities include:

- Field days and demonstrations
- Capacity building and training programmes
- Farmers-scientist's interaction meetings
- Exposure visits and field days
- Celebrated Kisan Diwas along with the Swachhata Pakhwada programme in Village Ujhilpur, Block Tetaria, Motihari
- 6458 kg Critical inputs provided to the 527 Farmers
- 8 No of IFS models developed at farmers field & farmers earning ₹100238 to ₹411750 per annum.







Fig.36. View of activities completed under FFP project

Schedule Caste Sub Plan (SCSP)-Scheme Nodal Officer: Dr. Jadhav Amol Kailash

A total of 5954 Scheduled Castes farmers including 3407 (57.22 %) number of male and 2547 (42.77 %) female have got direct benefit from various input distribution and capacity building programs provided by ICAR- MGIFRI, Piprakothi during the calendar year 2025. A total of 9 number of capacity building programs i.e. trainings, awareness-cum-exposure visits, kisan mela, animal health camps, field day etc. were organized for the SC farmers of East Champaran, Bihar. Various inputs were also distributed for the benefit of SC farmers which includes Wheat (HD-3411) and mustard seeds (Pusa Mustard-30), Moong seed, Vegetable seed packets, Electric motor 0.5 HP for irrigation, Irrigation Pipes, Knapsack battery sprayers, Bucket+Mug, Taurpulin, Vermibed, Farm tool Kit. (Table 11)

Table. 11. Executive summary of the activities done under SCSP during calendar year 2025, and number of SC farmers benefitted

Sl. No.	Activity	Qty.	Male	Female	Beneficiary
1	Training programs/ exposure visit/ awareness program/ animal health camp etc.	9 no.	2016	1596	3612
2	Vegetable seed packets	400 no.	218	182	400
3	Mustard seeds	275 kg	67	33	100
4	Wheat Seeds	9000 kg	113	87	200
5	Farm tool Kit	100 no.	65	35	100
6	Vermibed	100 no.	70	30	100
7	Knapsack Sprayer	311 no.	259	55	311
8	Taurpulin	488 no.	277	211	488
9	Electric motor 0.5 HP for irrigation	14 nos	45	5	50
10	Irrigation Pipes	12500 m	55	145	200
11	Bucket+Mug	300 No.	197	103	300
12	Moong seed	260 kg	28	65	93
			3407	2547	5954

Training/ awareness/ animal health camp/ kisan mela/ exposure visit program organized:

A total of 9 of training/ awareness/ animal health camp/ exposure visit/ kisan mela program were organized for Scheduled Caste farmers of East Champaran, Bihar during the calendar year 2025. A total of 3612 number of SC famers (2016 male & 1596 female) actively participated in the programs. The programs

were conducted on various aspects of integrated farming systems under waterlogged/ flood prone ecosystems, techniques of vegetable production, climate smart agriculture, mushroom production, Goat farming, poultry farming, etc. The details of the programs organized are mentioned below.

Table.12. Executive summary of programs organized under SCSP during calendar year 2025

Sl No.	Program organized	Number of Beneficiary			Venue	Date/ duration
		Total	M	F		
1	Training Program on Integrated farming practices for enhancing farmers' income in flood-prone and waterlogged ecosystem	90	31	59	Village Karariya Bairagi Tola, Block-Kotwa, East-Champaran	24-28 March, 2025
2	5 days Training Program on advance enterprise-Based integrated farming systems for livelihood security	83	46	37	Harpur, Block Chakia, East Champaran	26-30 March, 2025
3	National Seminar on “Agri-Diversification and Eco-Regional Farming”	800	500	300	ICAR-MGIFRI	04-05 March, 2025
4	Regional agriculture fair for eastern region 2025	900	500	400	ICAR-RCER Patna	20-22 February 2025
5	Kisan Mela: Atmnirbhar Krishi Sah Baagwani Vistaar evam Pashu Kalyaan Mela”	1000	600	400	KVK, Piprakothi, East Champaran	8-10 February 2025
6	Farmers’ awareness cum input distribution program	450	250	200	KVK, Piprakothi, East Champaran	09 February 2025
7	Field day: “Nutraceuticals: Natural Way to Boost Animal and Fish Health”	65	14	51	Village Kuwarpur, Block-Chakia, East Champaran, Bihar	12 November 2025
8	Animal Health Camp	125	41	84	Kuwarpur village, Block-Chakia, District-East Champaran, Bihar	13 June, 2025
9	Animal Health Camp	100	34	66	Ramgarh Mahuawa, Block- Chakia, District- East Champaran, Bihar	10 September, 2025
	Total	3612	2016	1596		

A five-day training programme on “Integrated farming practices for enhancing farmers' income in flood-prone and waterlogged ecosystem under SCSP

A five-day training programme on “Integrated Farming Practices for Enhancing Farmers’ Income in Flood-Prone and Waterlogged Ecosystems” was organized by

ICAR-MGIFRI under the Scheduled Caste Sub-Plan (SCSP) scheme of the Government of India from 24–28 March 2025 at Village Karariya Bairagi Tola, Block Kotwa, East Champaran, Bihar. A total of 89 farmers, including 31 male and 58 female participants, attended the programme. The training programme was coordinated by Mr. Rakesh N, Dr. Shreya

Nivesh, and Dr. Geeta. The programme was inaugurated by Dr. S. K. Purbey and included technical sessions delivered by multidisciplinary experts on integrated farming systems, cereal crop cultivation, goat and poultry rearing, pest and disease management, fisheries, and horticultural crop cultivation. During the programme, a total of 18 lectures and one institutional visit were organized for the participating farmers. The training programme successfully provided farmers with valuable technical knowledge and practical skills to address challenges associated with flood-prone and waterlogged ecosystems, thereby promoting sustainable livelihood opportunities and enhanced farm income.



Fig.37. Training programme conducted at Karariya village during 24th to 28th March 2025

A five-day training programme on Advanced Enterprise-Based Integrated Farming System for Livelihood Security under SCSP

A five-day training programme on “Advanced Enterprise-Based Integrated Farming System for Livelihood Security” was organized by ICAR-MGIFRI under the Scheduled Caste Sub-Plan (SCSP) scheme of the Government of India from 26–30 March 2025 at Harpur village, Chakia block, East Champaran,

Bihar. A total of 83 farmers, including 46 male and 37 female participants, attended the programme. The training programme was coordinated by Dr. Jadhav Amol Kailas, Dr. Haritha Mohan M, and Dr. S. K. Singh. The programme was inaugurated by Dr. S. K. Purbey and included technical sessions delivered by multidisciplinary experts on integrated farming systems, cereal crop cultivation, goat and poultry rearing, pest and disease management, and hands-on training on mushroom cultivation. The programme aimed to enhance farmers’ livelihood security through scientific, sustainable, and enterprise-based farming approaches. Certificates and mushroom cultivation kits were distributed to all participants at the conclusion of the programme.



Fig.38. Introductory lecture about Mushroom cultivation by Dr. S K Purbey



Fig.39. Interaction with farmer's and experts



Fig.40. Demonstration about the mushroom bag preparation



Fig.41. Certificate and Mushroom kit distribution to participants

Organization of field day on Nutraceuticals: Natural Way to Boost Animal and Fish Health under SCSP scheme on 12th November 2025

A field day on “Nutraceuticals: Natural Way to Boost Animal and Fish Health” was organized under the Scheduled Caste Sub-Plan (SCSP) scheme by ICAR-MGIFRI on 12 November 2025 at Kuwarpur village, Block Chakia, District East Champaran, Bihar, for Scheduled Caste farmers. The programme was coordinated by Dr. Lamella Ojha, Dr. Pratapa M G, and Dr. Jadhav Amol Kailas. A total of 65 farmers participated in the programme, including 51 female and 14 male farmers. During the programme, scientists interacted with farmers on various aspects of fish and animal health management, with special emphasis on the role and importance of nutraceuticals and balanced nutrition in improving animal and fish health. Farmers also shared the challenges they were facing in livestock and fishery management, for which the scientific team provided suitable technical recommendations and solutions. The scientists also visited farmers’ fields and observed the performance of crops including wheat, sugarcane, mustard, and various vegetable crops, along with the condition and growth performance of livestock and fishery components under the farming systems practiced by the farmers.



Fig.42. Glimpses of field day on Nutraceuticals: Natural Way to Boost Animal and Fish Health at Kuwarpur village

Organization of Animal health camps under the SCSP scheme for the year 2024-25:

ICAR Mahatma Gandhi Integrated Farming Research Institute (MGIFRI), Motihari organized animal health camps under the Scheduled Caste Sub-Plan (SCSP) scheme in East Champaran district, Bihar to provide veterinary services and promote scientific animal husbandry practices among livestock farmers of the SC community. The first camp was organized on 13 June 2025 at Kuwarpur village, Block Chakia, where livestock were examined by Dr. P. K. Bharti and Dr. Geeta under the coordination of Dr. Jadhav Amol Kailas (Fig 43). Necessary treatment and management recommendations were provided for the affected animals, and several cases were treated on-site. The most common health problems observed were parasitic infestations, diarrhoea, and low milk yield in lactating dairy cattle. Farmers were advised to adopt routine deworming and vaccination practices and to provide mineral-vitamin supplementation to improve the nutritional status and overall health of their livestock. The second camp was held on 10 September 2025 at Village Ramgarh Mahuawa, Block Chakia, where approximately 34 large animals, 280 small animals, and 22 poultry birds were examined and treated (Fig 44). The programme was inaugurated by Dr. S. K. Purbey, Principal Scientist, who created awareness among livestock farmers regarding scientific methods for enhancing animal production and controlling livestock diseases. The objectives and significance of the camp were explained by coordinator Jadhav Amol Kailas, while treatment and health management services were provided by Dr. P. K. Bharti. Livestock farmers actively participated and

cooperated enthusiastically throughout both programmes, contributing to their successful implementation. The camps served as important initiatives towards improving animal health care, disease management, and strengthening awareness among livestock farmers regarding scientific animal husbandry and disease management practices in the region.



Fig.43. Glimpses of Animal health camp organized at Kuwarpur village on 13th June, 2025



Fig.44. Glimpses of Animal health camp at Ramgarh Mahuawa on 10th September, 2025

Input distribution to SC farmers under the SCSP scheme for the year 2025

Distribution of wheat and mustard seeds

ICAR-MGIFRI distributed improved varieties of wheat and mustard seeds to Scheduled Caste (SC) farmers under the Scheduled Caste Sub-Plan (SCSP) scheme during the Rabi season of 2025. Wheat and mustard are among the major rabi crops cultivated in Bihar and play an important role in ensuring food security and farm income in the region. Under the programme, improved varieties namely HD-3411 (wheat) and Pusa Mustard-30 (mustard) were distributed to farmers from flood-affected villages including Guleria, Ramgarh Mahuawa, and Kuwarpur located in the Motihari and Chakia blocks of East Champaran district, Bihar. The initiative aimed to promote the adoption of high-yielding and climate-resilient crop varieties among SC farmers to enhance productivity, improve farm income, and strengthen livelihood security under flood-prone and waterlogged ecosystem conditions. Scientists of the institute also provided technical guidance to farmers regarding improved crop production practices, seed management, nutrient management, and pest and disease control for achieving better crop performance.



Fig.45. Glimpses of distribution of Wheat and Mustard seed to SC farmers under SCSP Scheme

Distribution of farm equipment's

ICAR-MGIFRI distributed various farm equipment and agricultural inputs to Scheduled Caste (SC) farmers under the Scheduled Caste Sub-Plan (SCSP) scheme during the year 2025. The distributed items included 0.5 HP electric irrigation motors, irrigation pipes, knapsack battery sprayers, bucket and mug sets, tarpaulins, vermibeds,

and farm tool kits. These inputs were provided to support agricultural activities, improve resource-use efficiency, and strengthen livelihood opportunities for small and marginal farmers. The beneficiaries included SC farmers from the villages of Ramgarh Mahuawa, Fulwariya, and Kuwarpur in Chakia block, as well as Mehua and Naraha villages of Turkaulia block in East Champaran district, Bihar. The programme aimed to enhance farm productivity, promote scientific farming practices, and reduce drudgery in agricultural operations through the use of improved farm tools and equipment. Scientists of the institute also guided farmers regarding the proper use, maintenance, and benefits of the distributed materials for sustainable farming and integrated farming system-based livelihood improvement.

North Eastern Hill (NEH) region scheme

Nodal officer: Dr. N.M. Patnaik

Member: Dr. P.K. Bharti

Under NEH scheme, ICAR-MGIFRI in collaboration with ICAR institute specified for NEH region, ICAR-RCER, ICAR research complex for NEH region, KVKs, University, conducted training and capacity building program, agri-input distribution program, workshop, to the farmers of NEH region. During the year 2025, A total of 345 farmers including 145 (42.03 %) male and 200 (57.97%) females have got direct benefit from various input distribution and capacity building programs provided by ICAR-MGIFRI, Piprakothi during the calendar year 2025. A total of 3 number of capacity building programs i.e. trainings, awareness-cum-exposure visits, etc. were organized for the NEH farmers (Table 13). A Technology and knowledge sharing workshop under NEH component was also jointly organized in collaboration with ICAR RCER Patna. Details report on each activity is given below;

Table 13: Details of the activities conducted under NEH scheme during 2025 by ICAR-MGIFRI

Sl. No.	Title of the program	Duration	Number of Participants	Venue/Place	Coordinators
1	Training program on Integrated farming system for higher farm income and sustainable livelihood	15-17 September 2025	110	ICAR-KVK South & West Tripura	Dr. Neela Madhav Patnaik and Dr. P.K. Bharti
2	Technology and knowledge sharing workshop under NEH component jointly organized in collaboration with ICAR RCER Patna	22-23 September 2025	100	ICAR RCER Patna	Dr. S K Purbey Dr. P K Bharti Dr. V S Meena Dr. Koushik Banerjee Dr. Neela Madhav Patnaik
3	Tribal Farmers' Conclave cum Exhibition cum training on "IFS for climate resiliency enhancing livelihood of tribal farmers	6-7 November 2025	243	KVK Dima Hasao, Assam	Dr. Ravi Kumar and Er. Vikas Paradkar
4	Scientific nursery management of Horticultural crops	26-28 November 2025	40	CAU Pasighat, Arunachal Pradesh	Dr. S.K. Purbey and Dr. Jadhav Amol Kailas
		Total	493		

Training Programme on “Integrated Farming System for Sustainable Livelihood and Income Enhancement” conducted at West and South Tripura during 15-17 September 2025

A three-day training programme on “Integrated Farming System (IFS) for Sustainable Livelihood and Income Enhancement” was organized at ICAR-KVK, West and South Tripura from 15-17 September 2025. A total of 110 farmers and farm women participated in the training programme. The training was conducted with the technical support of scientists and subject matter specialists from ICAR-MGIFRI, Motihari, ICAR-KVK West Tripura, at ICAR-KVK, South Tripura and ICAR Research Complex for NEH Region, Tripura Centre.

The programme commenced with registration of participants followed by the inaugural session. The objectives, schedule, and expected outcomes of the training were explained to the participants by the co-ordinators. The first day sessions were on the fundamentals of IFS and its relevance to the farming conditions of Tripura. The resource persons explained how integration of multiple enterprises can enhance resource recycling, reduce production risks, and provide year-round income opportunities. The second day sessions emphasized practical aspects of enterprise integration and resource management. The field demonstrations enabled participants to observe different units of the KVK to understand the components of integrated farming. The third day was participatory exercise of participants on economic evaluation and planning of integrated farming enterprises. Different group exercises were organized with the participants to help them in decision-making and enterprise selection, profitability assessment of IFS models Farm planning and resource allocation strategies. The training was highly interactive with active participation from farmers and farm women. Participants expressed interest in adopting integrated farming practices and requested continued technical guidance from ICAR-MGIFRI and KVK scientists. On the last

day of training, distribution of agricultural inputs such as Paddy seeds (var. Hakuchuk-2), Toria seeds (var. Tripura Toria), Field pea (var. TRCP-8) and Mushroom Spawn was carried out.





Training Program on “Scientific Nursery Management of Horticultural Crops” conducted at College of Agriculture (CoA), CAU, Pasighat, Arunachal Pradesh during 22-24 December 2025

A three-day Training Programme cum Field Day and Input Distribution Programme on “Scientific Nursery Management of Horticultural Crops” was jointly organized by ICAR-Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Motihari, Bihar, and the Department of Horticulture, College of Agriculture (CoA), Central Agricultural University (CAU), Pasighat, Arunachal Pradesh, under the NEH Scheme of ICAR-MGIFRI from 22-24 December 2025. The programme was attended by 40 participants, including 10 rural youth and 30 farm women from Arunachal Pradesh. The training consisted of seven expert-led technical sessions designed to combine theoretical knowledge with practical exposure. The programme commenced with registration and an inaugural session, followed by lectures on the importance, scope, planning, and layout of horticultural nurseries delivered by Dr. S. K. Purbey, Dr. Jadhav Amol Kailas, and Ms. Tasso Yatung. On the second day, Dr. Veluru Bhargav and Dr. Kh. Lily Devi conducted sessions on nursery site selection, growing media preparation, and protected nursery structures for quality planting material production. As part of the programme, a field visit was organized to the natural mandarin orchard of Shri Riju Megu at Mebo Village, Pasighat. The orchard comprises approximately 800 mandarin trees spread over 3 hectares and is being managed without the use of chemical fertilizers or pesticides. The visit provided participants with practical insights into sustainable and eco-friendly orchard management practices. During the visit, Dr. Jadhav Amol Kailas and Dr. S. K. Purbey also visited the research farms and demonstration units of CoA Pasighat and interacted with local farmers in nearby villages to understand regional horticultural practices and production systems. The programme successfully enhanced participants’ knowledge



Fig. 46 Glimpses of the training sessions and Input distribution to farmers of West and South Tripura from 15-17 September 2025

and skills in scientific nursery management, quality planting material production, and horticultural entrepreneurship, thereby contributing to livelihood improvement and capacity building in the region. The final day focused on the entrepreneurial and plant health aspects of nursery management. Dr. Naorem Bidyaleima Chanu delivered a session on nursery economics and marketing, while Dr. Ningthoujam Surmina Devi discussed nursery plant protection measures and strategies for maintaining healthy planting materials. To promote the adoption of scientific nursery practices, essential agricultural inputs including HDPE crates (40 Nos), spades (40 Nos), rakes (40 Nos), and vegetable seed packets (40 Nos) of IIHR varieties were distributed to the participants. The programme was coordinated by Dr S K Purbey, Dr. Jadhav Amol Kailas, and Dr. Naorem Bidyaleima Chanu.



Fig. 47 Glimpses of the training cum input distribution program conducted at CAU, Pasighat, Arunachal Pradesh during 22-24 December 2025

Tribal Farmers Conclave cum Exhibition program organized in Dima Hasao, Assam during 06-08 November 2025

A “Tribal Farmers’ Conclave cum Exhibition cum training on “IFS for climate resiliency enhancing livelihood of tribal farmers” along with inputs distribution (i.e. pig feed, mineral mixture, fruit plant saplings, rajma seed, chicks, mustard seed etc.) programs were organized during 06-08 November 2025 at Haflong Govt. College Auditorium Hall, New Haflong, Dima Hasao, Assam. This program was organized by ATARI Zone VI Guwahati and KVK Dima Hasao in collaboration with ICAR- NRC on Mithun, ICAR- NINFET, ICAR- MGIFRI, ICAR RC NEH Mizoram, ICAR- IVRI, ICAR- CCRI, Coconut Development Board and Spices Board of India, and several other KVKs. Inaugurated of the event was done by Shri Debolal Gorlosa, Chief Executive Member of the Dima Hasao Autonomous Council; Hon’ble Smt. Nandita Gorlosa, Minister of Sports & Youth Welfare and Welfare for Minorities & Development, Government of Assam, and Dr. G. Kadirvel, Director of ICAR-ATARI, Zone VI along with other dignitaries. The event focused on empowering tribal farmers in the region by emphasizing new technologies, best practices in agriculture, and opportunities for processing, value addition, and entrepreneurship, with a special focus on the hill ecosystem. About 250 (170 males and 80 females) tribal farmers and others participated in the event. Technical sessions on various aspects like IFS, entrepreneurship development, livestock, poultry and mithun production, horticulture on hilly terrain with special emphasis on ginger, pineapple and orange were also conducted. An ethnic food festival was organized on the side-line of the programs. Some of the successful farmers shared their experiences and hurdles in ‘jhoom’ cultivation practices; and requested for the rapid development of marketing and transportation infrastructures so that they can export their agricultural produce.



Fig. 48 Glimpses of the training cum input distribution program organized in Dima Hasao, Assam during 06-08 November 2025

Technology and knowledge sharing workshop under NEH component jointly organized by ICAR-MGIFRI, Motihari and ICAR RCER Patna, Bihar during 22-23 September 2025

A two-day “Technology and Knowledge Sharing Workshop under the NEH Component” commenced at the ICAR Research Complex for Eastern Region, Patna on September 22, 2025, jointly organized by ICAR-RCER, Patna, and ICAR-MGIFRI, Motihari. The programme was honored by the esteemed presence of the Chief Guest, Dr. Anupam Mishra, Honourable Vice Chancellor, CAU Imphal, while Dr. Rakesh Kumar, ADG (AAF & CC), NRM, ICAR, New Delhi, joined the session virtually. The event was further enriched by distinguished dignitaries, including Dr. Anup Das, Director, ICAR-RCER, Patna; Dr. Anjani Kumar, Director, ICAR-ATARI, Patna; Dr. Bikash Das, Director, ICAR-NRC on Litchi; Dr. S.K. Purbey, Director, ICAR-MGIFRI, Motihari; Dr. H. Kalita, HoRC, ICAR RC for NEHR, Nagaland Centre; Dr. L.M. Garnayak, Director of Research, CAU Imphal; and Dr. R.K. Jat, Sr. Cropping System Agronomist & In-charge, BISA, Pusa. Scientists and Heads from various

ICAR institutes across the NEH region also participated actively. Honourable Vice Chancellor underscored the vital role of system knowledge sharing and cross-learning in strengthening agriculture while calling for urgent adoption of resource conservation technologies and ensuring efficient drainage management to tackle challenges of waterlogged areas. He emphasised the inclusion of makhana and water chestnut in the wetland ecosystem of the NEH region. During the event, Dr. Rakesh Kumar, ADG, ICAR, New Delhi, congratulated the ICAR-RCER, Patna team, along with the ICAR-MGIFRI, Motihari team, for the innovative initiative of organizing the workshop, stating that it will foster research exchange and capacity building and enable the Eastern region to benefit from NEH’s vast germplasm resources through material transfer and MoUs. During the welcome address, Dr. Anup Das, Director, ICAR-RCER, Patna, stated that the NEH region is rich in unique germplasm and home to an extensive range of biodiversity, which holds immense potential for agricultural advancement. He emphasized that this workshop will strengthen knowledge exchange, collaborative research, and technology adaptation to benefit not only the NEH but also the entire Eastern region and beyond.

Experts in the workshop highlighted innovative agricultural solutions for the NEH region. Dr. Anjani Kumar stressed capacity building, while Dr. Bikash Das focused on germplasm diversity and bioprospecting. Dr. S.K. Purbey showcased location-specific IFS models for flood-prone areas, and Dr. H. Kalita emphasized altitude-wise cropping systems and agroforestry innovations. Dr. L.M. Garnayak highlighted stress-tolerant varieties, smart farming, and low-cost feed solutions, while Dr. R.K. Jat shared RCT techniques for evaluating interventions. Earlier, the NEH team, led by the Hon’ble Vice Chancellor, visited the fields to observe ongoing research activities. During the workshop discussions, prioritized research areas were identified for each state, appropriate technological

interventions were proposed as solutions, and one extension folder was also released. The workshop successfully provided a platform for sharing innovative agricultural technologies, promoting collaboration, and strengthening the resilience and sustainability of farming systems in the NEH region. Participants emphasized that such initiatives are vital for enhancing farmer livelihoods, optimizing resource use, and harnessing the region's vast biodiversity for inclusive agricultural development. The program concluded with a vote of thanks by the Organizing Secretary, Dr. Biswajit Debnath. A total of 100 participants across the country had participated especially from the NER, Bihar and Jharkhand Region.



Fig. 49 Glimpses of Technology and knowledge sharing workshop jointly organized by ICAR-MGIFRI, Motihari and ICAR RCER Patna, Bihar during 22-23 September 2025

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- Purbey, S. K., Mandal, K.G., Singh, A.K., Banerjee, K., Perspective of horticulture based Integrated Farming System in waterlogged and flood prone areas. Lead paper in compendium of National Seminar on Agri-Diversification and Eco-Regional Farming, 4-5 March, 2025, ICAR-MGIFRI, Motihari, Bihar. Pp 37
- Rakesh, N., & Nayak, M. 2025. *Regional disparities in the implementation of FPOs in Karnataka: A machine learning approach* [Conference abstract]. VIII Post Graduate Research Conference-2025, July 25-26. University of Agricultural Sciences Dharwad.
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- Singh, S. K. Patnaik, N.M., Singh, A. K., Purbey, S. K., Paradkar, V., Kumar, R., Nivesh, S., Banerjee, K., and Bharti, P. K. 2025. Enhancing agricultural productivity and livelihood Security: impact of the farmers first programme in the east champaran region. In compendium of National Seminar on Agri-Diversification and Eco-Regional Farming, 4-5 March, 2025, ICAR-MGIFRI, Motihari, Bihar. Pp 70
- Soundarya, S. R., & Rakesh, N. (2025, December 23-24). Enhancing domestic production and unlocking export potential in sandalwood value chains [Conference

abstract]. National Conference on Challenges and New Frontiers in Agriculture, Sericulture and Allied Sectors (CHANAS), University of Agricultural Sciences Bangalore & Central Silk Board.

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Awards, Honors and Recognitions

- ICAR-MGIFRI, received best exhibition stall award during Krishi Mela: Atmnirbhar krishi sah bagwani vistar evam pashudhan kalyan conducted at KVK, Piprakothi on 08-10 February 2025.
- ICAR-MGIFRI, received First prize in exhibition stall among the ICAR category during Krishi Mela on the theme कृषि, मत्स्यिकी एवं पशुधन उन्नति मेला-सह-किसान सम्मान समारोह conducted by KVK, Piprakothi on 17-19 September 2025.
- ICAR-MGIFRI, received Second prize in exhibition stall among the ICAR institute category during Krishi Mela on the theme सम्मान समारोह-सह- कृषि पशुधन एवं मत्स्यिकी विकास मेला conducted by KVK, Piprakothi at Gandhi Auditorium in Motihari on 01-02 September 2025.
- ICAR-MGIFRI, received First prize in exhibition stall among the ICAR institute category during Krishi Mela conducted by KVK, Parsauni on 25-26 September 2025.
- ICAR-MGIFRI, Motihari signed MoU with IMD Patna for accurate and timely recording of synoptic weather observation for weather forecasting and climatological purposes on 18 March 2025
- Dr. S.K. Purbey (Director, ICAR-MGIFRI) played a crucial role as Chairman Organization of National Seminar on "Agricultural Diversification and Eco-Regional Farming" during 4-5 March 2025 at ICAR-MGIFRI, Motihari
- Dr. S.K. Purbey (Director, ICAR-MGIFRI) was invited as Guest of Honor/ distinguished guest in Foundation Day ceremony of ICAR-ATARI, Patna on 19.08.2025; Training programme organized by KVK, Madhopur, & Piprakothi.
- Dr. P. K. Bharti (Sr. Scientist, LPM) received certificate for registering new breed of goat i.e. CHAUGARKHA on 17.1.2025 at NASC, New Delhi. The Accession number of this new breed with home tract Uttarakhand is INDIA_GOAT_2400_CHAUGARKHA_06040
- Dr. Koushik Banerjee (Scientist, Agricultural Meteorology), as PI of the project along with Co-PIs (Dr. Shreya Nivesh, Er. Vikas Paradkar, Dr. Ravi Kumar, Dr S. K. Samal, Dr. S. K. Purbey, Dr. K.G. Mandal) awarded with technology certificate on Analyzing trends in spatiotemporal seasonal rainfall over Eastern India using innovative trend analysis method (ICAR technology (Methodology) ICAR-NRM MGIFRI-Methodology-2025-094) on 16 July 2025.
- Dr. Ravi Kumar (Scientist-SS, Fisheries Resource Management) completed his PhD degree on 16.07.2025 in the discipline of Fisheries Resource Management of ICAR-CIFE, Mumbai.
- Dr. N.M. Patnaik (Scientist, Agricultural Extension), was invited as external evaluator in the Viva-voce and evaluation of two M.Sc. thesis on 23rd August, 2025 of Department of Extension Education, Institute of Agricultural Sciences, Banaras Hindu University (BHU), Varanasi, UP.
- Dr. Naveenkumar B. Patil is awarded as Associate developer of technology/ process entitled "Phosphine fumigation protocol for Quarantine Pre Shipment Treatment and long-term storage against storage insect pests" and certified by ICAR, New Delhi on 16.07.2025. The ICAR Technology/ process code is: ICAR-CS-NRIIPM-Process-2025-030.
- Dr. S.K. Purbey (Director, ICAR-MGIFRI) was invited as an external resource person

- and delivered keynote lecture entitled "ICAR-MGIFRI Research Outreach for North East Himalayan Region Convergence of Technology for Sustainable Farming & Livelihood Security" in National Workshop on "Technology and Knowledge Sharing Workshop under NEH Component" Organized by ICAR RCER, Patna in collaboration with ICAR-MGIFRI, Motihari during 22-23 Sept. 2025 at ICAR-RCER, Patna.
- Dr. V. S. Meena (Sr. Scientist, Soil Science) received the Best Oral Presentation Award for the paper Agroecological pathways of crop diversification for agri-food and nutritional security in Bihar. In: Proceedings of the National Conference on System of Crop Intensification for Climate-Smart, Water and Nutrient-Efficient Agriculture in National seminar conducted during 4-5, September 2025, Indian Society of Water Management (Odisha Chapter) & ICAR-Indian Institute of Water Management, Bhubaneswar, India.
 - Dr. Jadhav Amol Kailas (Scientist, Fruit Science) bagged best poster presentation award for the research paper entitled "Efficient Rainwater Harvesting and Supplemental Irrigation for Brinjal Intercrop in a Mango-Based Integrated Farming System" in 1st International Farming Systems Conference (IFSC 2025) held at ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut, India during 07-09, March, 2025
 - Dr. Koushik Banerjee (Scientist, Agricultural Meteorology) received best Poster award for the paper entitled Flood-affected area delineation in Eastern India using Sentinel-1 SAR for developing integrated farming models under waterlogged conditions at 1st International Farming Systems Conference: Transforming Food, Land and Water Systems under Global Climate Change 07-09 March, 2025, ICAR-IIFSR, Modipuram.
 - Mr. Rakesh N (Scientist, Agricultural Economics) received the Best Oral Presentation Award at the VIII Post Graduate Research Conference held at the University of Agricultural Sciences, Dharwad, during 25-26 July 2025.
 - Dr. Ravi Kumar (Scientist-SS, Fisheries Resource Management) conferred Certificate of Appreciation Award for the significant contribution in Research and Development Programmes of ICAR-MGIFRI, on 11th Foundation Day of the institute held during 21 August 2025.
 - Dr. Pratapa M. G. (Scientist, Fish Health) received the Best Concept Note Award during the valedictory function of the 114th FOCARS Training Programme at ICAR-National Academy of Agricultural Research Management (NAARM) from Honourable Secretary, DARE and Director General, ICAR, Dr. Mangi Lal Jat, for the innovative concept note titled "Next-Gen Diagnostics in Aquaculture: Quantum Dots for Rapid and Early Detection of Aquatic Pathogens.
 - Dr. S.K. Purbey (Director, ICAR-MGIFRI) as invited to attended a meeting on the theme "Prospects and potential of oilseed crops in water congested ecology of N. Bihar" in National Mission on Food Oilseed Mission (NMEO-OS) at Collectorate, Motihari, Bihar on 07.05.2025.
 - Dr. S.K. Purbey (Director, ICAR-MGIFRI) as invited as an expert in 14th SAC of KVK, Saran, 16th SAC of KVK, Madhopur and 6th SAC of KVK, Narkatiyaganj, RPCAU, and 15th SAC meeting of KVK, RPCAU, Piprakothi, held on 09.04; 29.08 and 08.10.2025 respectively.
 - Dr. P. K. Bharti (Sr. Scientist, LPM) received Best Poster Presentation Award for the paper: " Evaluation of specially designed goat feeding manger for better

utilization of valuable feed and enhancing income of goat farmers in wetland ecosystem of north Bihar" at the National Seminar on "Agri-Diversification and Eco-Regional Farming" held during March 4-5, 2025, at ICAR-MGIFRI, Motihari, Bihar

- Dr. P. K. Bharti (Sr. Scientist, LPM) was invited as Chairman for evaluating exhibition stall Krishi mela, KVK, Piprakothi wef 8-10 February 2025
- Dr. P. K. Bharti (Sr. Scientist, LPM) was invited as Chairman for evaluating exhibition during Krishi Mela at ICAR RCER, Patna wef 20-22 February 2025. I had also participated and delivered talk during kasan goshti during the event
- Dr. N.M. Patnaik (Scientist, Agricultural Extension) was invited as a member of technical session committee in "Kisan Unnati Mela 2025" from 08th to 10th February 2025 at KVK, Piprakothi, East Champaran under Dr. RPCAU, Pusa.
- Dr. S.K. Singh (Pr. Scientist, Agronomy) received Best Oral presentation award for the paper Enhancing Agricultural Productivity and Livelihoods: Impact of the Farmers FIRST Project in in the East Champaran region during 1st National Seminar on "Agri-diversification and Eco-regional Farming" (NSADERF-2025) from 4th - 5th March 2025 at ICAR-Mahatma Gandhi Integrated Farming Research Institute, Piprakothi, Motihari.
- Dr. Shreya Nivesh (Scientist, LWME) received Best Oral Presentation Award for the paper: "Assessment of Water-Saving Irrigation Techniques for Winter Maize in the Rice-Maize Cropping System of North Bihar" at the National Seminar on "Agri-Diversification and Eco-Regional Farming" held during March 4-5, 2025, at ICAR-MGIFRI, Motihari, Bihar
- Er. Vikas Paradkar (Scientist, FMPE) received Best Oral Presentation Award for the paper: " Design and development of low-cost equipment and machinery for waterlogged farming conditions " at the National Seminar on "Agri-Diversification and Eco-Regional Farming" held during March 4-5, 2025, at ICAR-MGIFRI, Motihari, Bihar
- Dr. N.M. Patnaik (Scientist, Agricultural Extension) received the best oral presentation award at NSADERF-2025 for presentation entitled "Framework for Sustainable Livelihood of Livestock Farmers in Flood Prone Areas of Odisha: Exploratory Research Study" at the National Seminar on "Agri-Diversification and Eco-Regional Farming", held at ICAR-MGIFRI, Piprakothi, Motihari (E. Champaran), Bihar from 4th to 5th March 2025, jointly organized by ICAR-MGIFRI and BAMETI, Patna.
- Dr. Jadhav Amol Kailas (Scientist, Fruit Science) bagged best oral presentation award for the research paper entitled "Review on potential and prospects of sustainable mango-based farming in flood-prone areas of North Bihar" in 1st National Seminar on "Agri- Diversification and Eco-regional, Farming" held at ICAR-Mahatma Gandhi Integrated Farming Research Institute, Motihari during 4-5 March, 2025.
- Dr. P. K. Bharti (Sr. Scientist, LPM) was nominated as Chairman for Exhibition Stall Committee, member of Stall Evaluation Committee, Publication Committee, Advertisement and Publicity Committee, Convener during 1st National Seminar on "agri-diversification and eco regional farming" at ICAR-MGIFRI, Piprakothi, Motihari, Bihar wef 4-5 March 2025
- Dr. Shreya Nivesh (Scientist, LWME) received First prize in Hindi kavya path pratiyogita, second prize Hindi ashubhashan pratiyogita, held during September 15, 2025 at ICAR-MGIFRI, Motihari, Bihar

- Dr. N.M. Patnaik (Scientist, Agricultural Extension), received awards in essay, quiz, elocution, debate and poetry reciting competition in the non-Hindi category, during the celebration of Hindi Pakhwada by participating in at ICAR-MGIFRI for the year 2025.
- Dr. P. K. Bharti (Sr. Scientist, LPM) received 1st prize for Hindi wad vivad pratiyogita, 3rd prize for Hindi Nibandh pratiyogita during Hindi Pakhwada organized at MGIFRI wef 01-15 September 2025
- Dr. Geeta, Scientist, received second and third position in 100 and 200 m race in ICAR - TOURNAMENT OF EASTERN ZONE (TEZ) 2024 conducted during 6-9 May 2025 at ICAR-IVRI IZATNAGAR, UP.
- Mr. Vishnu Kaji, T-1, received first position in high jump, second position in long jump and third position in 100m race in ICAR - TOURNAMENT OF EASTERN ZONE (TEZ) 2024 conducted during 6-9 May 2025 at ICAR-IVRI IZATNAGAR, UP.
- Mr. Vishnu Kaji, T-1, received first position in long jump, third position in high jump in ICAR - Interzonal Tournament 2024 conducted during 4-7 November 2025 at ICAR-Indian Institute of Sugarcane Research, Lucknow, UP.



Dr. V. S. Meena (Sr. Scientist, Soil Science) received the Best Oral Presentation Award in National seminar conducted during 4-5, September 2025, Indian Society of Water Management (Odisha Chapter) & ICAR-Indian Institute of Water Management, Bhubaneswar, India



Dr. Ravi Kumar (Scientist-SS, Fisheries Resource Management) conferred Certificate of Appreciation Award for the significant contribution in Research and Development Programmes of ICAR- MGIFRI, on 11th Foundation Day of the institute held during 21 August 2025



Dr. Jadhav Amol Kailas (Scientist, Fruit Science) & Dr. Koushik Banerjee (Scientist, Agricultural meteorology) bagged best poster presentation award in 1st International Farming Systems Conference (IFSC 2025) held at ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut, India during 07-09, March, 2025



ICAR-MGIFRI received one technology certified for the work “Analyzing trends in spatiotemporal rainfall over Eastern India using innovative trend analysis method” carried out by Dr. Koushik Banerjee (Lead) with associate Dr. Shreya Nivesh, Er. Vikas Paradkar, Dr. Ravi Kumar, Dr S. K. Samal, Dr. S. K. Purbey, Dr. K.G. Mandal



Dr. Geeta, Mr. Vishnu Kaji receiving certificates/ mementos during TEZ conducted at ICAR-IVRI, Bareilly, and ICAR-IISR, Lucknow during 2025



Dr. Pratapa M. G. (Scientist, Fish Health) received the Best Concept Note Award during the valedictory function of the 114th FOCARS Training Programme at ICAR-National Academy of Agricultural Research Management (NAARM) from Honourable Secretary, DARE and Director General, ICAR, Dr. Mangi Lal Jat, for the innovative concept note titled “Next-Gen Diagnostics in Aquaculture: Quantum Dots for Rapid and Early Detection of Aquatic Pathogens.

Project Information

Newly proposed research projects

SL. No.	Project Title	PI Name
1	Improved crop management practices in the <i>chaur</i> and <i>diara</i> areas of East Champaran	Dr. S. K. Singh
2	Transforming waterlogged farming systems in eastern India through climate resilient IFS or Farmer centric solutions for sustainable and profitable farming in Eastern India's waterlogged regions	Dr. V.S. Meena

Ongoing research projects

Sl. No.	Project Title (Project Code)	Duration	PI Name
1.	Land shaping for development of horti-based farming system model for low lying areas of Bihar (NRMAMGIFRISIL202000100004)	April 2020 to March 2026 (Ext up to March 2028)	Dr. S. K. Purbey
2.	Development of organic rice-fish-duck IFS model in waterlogging situations of North Bihar (NRMAMGIFRISIL202100200013)	Sep 2021 to Aug 2025 (Ext up to March 2028)	Dr. S. K. Singh
3.	Design and development of low-cost equipment and machineries for waterlogged situations (NRMAMGIFRISIL202100300014)	Sep 2021 to Aug 2025 (Ext up to March 2026)	Er. Vikas Paradkar
4.	Assessment of natural farming in rice-wheat cropping system in North Bihar conditions (NRMAMGIFRISIL202200100016)	July 2022 to June 2027	Dr. P. K. Bharti
5.	Multidimensional study on the impact of flood and waterlogging on farmer's livelihood, animal health and adaption strategies followed in sleeted districts of Bihar (NRMAMGIFRISIL202400500021)	May 2024 to April 2026	Dr. V.S. Meena
6.	Development and assessment of Self-sustaining Poultry-Fish-Horti Based Integrated Farming (NRMAMGIFRISIL202400300019)-	April 2024 to March 2027	Dr. Jadhav Amol Kailas
7.	A Study on Existing Farming Systems and Development of an Optimal Plan for Flood-prone and Water-logged Ecosystems of Eastern India (NRMAMGIFRISIL202400100017)	Feb 2024 to Jan 2027	Mr. Rakesh N
8.	Development and assessment of mango-based IFS model for sustainable resource management in flood prone areas of North Bihar (NRMAMGIFRISIL20240040002)	May 2024 to April 2027	Dr. Jadhav Amol Kailas
9.	Development of eco-friendly management for major insect pests and diseases of important crops in water congested ecosystem of North-Bihar (NRMAMGIFRISIL202400200018)	April 2024 to March 2027 (Ext up to 1 year)	Dr. Naveenkumar B Patil

ICAR funded research projects

Project Title	Budget (in lakh)	Duration	PI Name	Funded by
Improving livelihood of small farmers through good practices in agriculture, fisheries and animal husbandry in the East Champaran region (Farmer FIRST Project; RMAMGIFRICOL202000500008)	8.90	2025-2026	Dr. S. K. Singh	ICAR, New Delhi

Schedule Cast Sub Plan (SCSP)	21.9	2025-2026	Dr. Jadhav Amol Kailas	ICAR, New Delhi
NEH Sub Plan	50.00	2025-2026	Dr. Neela Madhav Patnaik Dr. P. K. Bharti	ICAR, New Delhi

List of concluded/ assessed research projects

SN	Title of the project	Duration	Name of PI
1	Development and assessment of fish-based integrated farming models under floodplain ecosystems (NRMAMGIFRISIL202000300006)	Oct 2020 to March 2024	Dr. Ravi Kumar
2	Post-harvest losses study of major fruits and vegetables in East Champaran district of Bihar (NRMAMGIFRISIL202000100005)	April 2020 to March 2024	Dr. S. K. Purbey
3	Constraint analysis and performance evaluation of poultry birds reared under backyard system in East Champaran district of Bihar (NRMAMGIFRISIL202000800011)	Nov 2020 to March 2025	Dr. P. K. Bharti
4	Development and assessment of goat based integrated farming models in wetland ecosystem (NRMAMGIFRISIL202000700010)	Nov 2020 to March 2024	Dr. P. K. Bharti
5	Estimation of optimum residue retention in rice-wheat cropping system raised on calcareous soil of middle Indo-Gangetic Plains (NRMAMGIFRISIL202000400007)	Oct 2020 to March 2024	Dr. A.K. Singh
6	Evaluation of irrigation water saving techniques in winter Maize under North Bihar conditions (NRMAMGIFRISIL202100100012)	April 2021 to March 2025	Dr. Shreya Nivesh
7	Delineation and characterization of flood-prone and waterlogged areas of Eastern India and development of IFS plans (NRMAMGIFRISIL202100400015)	Sep 2020 to Aug 2025	Dr. Koushik Banerjee
8	Identification of potential sustainable farming system~ constraints and opportunity in flood prone ecosystem (NRMAMGIFRISIL202000600009)	Nov 2020 to Oct 2024	Dr. Koushik Banerjee

Research Management Meetings (IRC/RAC/IMC)

Meeting of the 9th Institute Research Council (IRC)

The 9th IRC Meeting of ICAR-Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Motihari was held on 4-5 February 2025 under the Chairmanship of the Director, ICAR-MGIFRI. The meeting was started with the welcome address by the member secretary, Dr. P.K. Bharti, followed by opening remarks by the Director, ICAR-MGIFRI, Motihari. In his opening remarks, Dr. S. K. Purbey, Director (A) of the institute opined that IRC is one of the most important meetings of any R&D institute where research projects are comprehensively discussed and guidelines for future course of action is decided. He has comprehensively explained the institute's achievements during 2024-25. He sensitized scientists to develop habit of reading good research articles, interacting with senior researchers so that research project implementation can be done successfully. He urged the scientists for getting externally funded projects and make efforts to get patents, copyrights etc. Further, he stressed on field research work, since adoption of the research output/ technology among the farmers is very important. After that, Dr. P K Bharti presented ATR of the previous (8th IRC) proceeding and subsequently, new and on-going research projects were presented and discussed in details. Subsequently, the PIs of all projects presented progress of ongoing research activities. These included the development of an organic rice-fish-duck IFS model for waterlogged situations in North Bihar; evaluation of irrigation water-saving techniques for winter maize; and studies on existing farming systems to develop optimal plans for flood-prone and waterlogged ecosystems in Eastern India. Other projects covered the multidimensional impact of floods on farmers' livelihoods and animal health, self-sustaining poultry-fish-horticulture IFS, eco-friendly disease management for major crops in water-congested ecosystems, and mango-based IFS models for flood-prone areas. Further work included delineation of flood-prone and waterlogged areas in Eastern India, livelihood improvement through good agricultural practices under FFP, design of low-cost equipment for waterlogged conditions, and constraint analysis of backyard poultry systems in East Champaran. Projects also assessed natural farming in rice-wheat systems and land

shaping for crop diversification in low-lying areas of Bihar. A new project proposal on Improved Crop Management Practices in the Chaur and Diara Areas of East Champaran was also presented. All presentations included detailed discussions on suggestions, action points, and future plans. The Chairman congratulated all the Scientists for the successful presentation and scientific discussion in the IRC meeting. However, he has given instructions to all Scientists the following:

- Monthly meeting among PI and Co-PIs at least once or twice is required to streamline the research work and output
- Scanned copy of each RPPs (I, II, III) has been forwarded to the PI and accordingly it may be forwarded to all Co-PIs.
- I-GoT Karamyogi platform to be utilized for increasing the knowledge and skills of scientists
- Emphasis on publication of research articles (above 7 NAAS rating), policy paper, technical bulletins, popular articles
- RAC recommendations to be taken up by scientists in the ongoing research projects and new research proposals.

The meeting on both days ended with vote of thanks.



9th IRC Meeting of ICAR-Mahatma Gandhi Integrated Farming Research Institute

Meeting of the 10th Institute Research Council (IRC)

The 10th IRC Meeting of the ICAR-Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Motihari was held during 9-10th July 2025 and 28th July 2025 under the Chairmanship of the Director. The meeting was started with the welcome address by the member secretary, Dr. P.K. Bharti, followed by opening remarks by the Director, ICAR-MGIFRI, Motihari. In his opening remarks, Dr. S.K Purbey Director (A) of the institute opined

that IRC is one of the most important meetings of any R&D institute where research projects are comprehensively discussed and guidelines for future course of action is decided. He conveyed the instructions received from honorable DDG made during interaction meeting with all directors at NRM Division on 21.05.2025 which is as follows:

- Duplicity of goal/projects among the Institutes should be avoided, integration and convergence of Institutes with similar thematic areas, utilization of the budget as per the BE etc. It was also suggested that while formulating the New EFC for the period 2026-31, Institutes shall take care to formulate the projects in line with proposed EFC document and completing the same with the EFC ending year. Any unfinished/incomplete activity/activities may be considered into the next EEC.
- All NRM Institutes are having their own specialization in the mandated activities and their specialization should be utilized by each of the Institutes through integration, sharing, convergence of experiments and activities, joint research team across the Institutes, capacity building etc. It was deliberated and discussed that each institute Should evolve a strategy to restrict the number of research projects to 5-10 in numbers based on the priority areas, resources, strength of the scientists in the institute etc.
- Each institute should have projects addressing Diagnostic research (Laboratory/Field Prognostic research/prediction research (modelling, simulation studies), regional studies (like Indo-Gangetic Plain. Coastal region, Hilly region etc.), National studies (studies align with National programs like achieving LDN etc.), and studies involving use of modern tools/techniques (RS, GIS, AI. ML, big data analysis, statistical downscaling, scenario-based analysis, genomics, Proteomics. metabolomics etc.). IRC Chairman further emphasized the urgent need to develop MGIFRI Vision 2050, highlighting the importance of field relevance and measurable outcomes. He directed all scientists to adopt the One Team One Task (OTOT) approach,

with headquarters monitoring progress. He expressed concern over the lack of publications and urged immediate submission of high-quality papers with institutional affiliation. The PME Cell was asked to track progress and ensure compliance.

The Director stressed that technology certification must be backed by research bulletin, and publication as it is more critical than mere technology development. He called for the immediate implementation of all actionable points in the Vision document, including lab readiness, weather observatory setup, and resource mapping. A SWOT analysis was discussed, identifying both gap and researchable issues. He concluded by insisting on sincerity, timely execution, and strong publication culture for institutional growth and national impact. After that, Dr. P K Bharti, member secretary, presented ATR of the previous IRC and 4th RAC proceeding. Afterward, the PIs presented progress on all ongoing research activities which included: the development of an organic rice-fish-duck IFS model for waterlogged conditions in North Bihar; evaluation of irrigation water-saving techniques for winter maize; and studies on existing farming systems to design optimal plans for flood-prone and waterlogged ecosystems in Eastern India. Other projects addressed the multidimensional impact of floods on farmers' livelihoods and animal health; self-sustaining poultry-fish-horticulture IFS models; eco-friendly management of major crop diseases in water-congested ecosystems; and mango-based IFS models for flood-prone areas. Further work covered delineation of flood-prone and waterlogged areas in Eastern India, livelihood improvement through good agricultural practices under the Farmers FIRST Programme (FFP), design of low-cost equipment for waterlogged conditions, and constraint analysis of backyard poultry systems in East Champaran. Additional projects assessed natural farming in rice-wheat systems and land shaping for crop diversification in low-lying areas of Bihar. A new project proposal titled Transforming Waterlogged Farming Systems in Eastern India through Climate-

Resilient IFS or Farmer-Centric Solutions for Sustainable and Profitable Farming in Eastern India's Waterlogged Regions was also presented. Each presentation was followed by detailed discussions on suggestions, action points, and forthcoming strategies. The Chairman congratulated all the Scientists for the successful presentation and gave some of the general observations and suggestions as follows:

- Pointwise RAC recommendations were also discussed and asked to take proper & timely action as RAC meeting will be held very shortly.
- Monthly meeting among PI and Co-PIs at least twice is required to streamline the research work and output at least twice in a month.
- Scanned copy of approved RPPs (I, II, III) must be forwarded to the PI and accordingly it may be forwarded to all Co-PIs.
- Emphasis should be given on publication of research articles (above 7 NAAS rating), policy paper, technical bulletins, popular articles etc.
- RAC recommendations to be taken up by scientists in the ongoing research projects and new research proposals.

The meeting ended with vote of thanks.



10th IRC Meeting of ICAR-Mahatma Gandhi Integrated Farming Research Institute

Meeting of the Research Advisory Council (RAC)

The third Meeting of the 2nd Research Advisory Committee was held under chairmanship of Dr. C. L. Acharya, Former Director, ICAR-IISS, Bhopal and team members viz; Dr. Rakesh Kumar, ADG (NRM)- ICAR (AAF&CC), Dr. Masood Ali, Former Director, ICAR-IIPR, Kanpur, during 20-21 November 2025. The 2-day meeting comprised of deliberations, visit to the Institute, research farm, farmers field at and near Motihari and interaction with Scientists and farmers. The meeting was started at 9:30 am on the 20th November at *Karpoori Thakur Smruti Kissan Prasikshan Sabhagar* of the ICAR-MGIFRI,

Motihari. Before that, the statue of Mahatma Gandhi Ji was garlanded and plantation was done by the dignitaries. The Member Secretary initially welcomed the Chairman, Members, Director and Scientists of the Institute. The Chairman and Members were formally welcome by Dr. S. K. Purbey, the Director (A) of the Institute with their brief introduction. This was followed by the brief presentation of the progress report and appraisal of the institute activities by the director, MGIFRI. The Action Taken Report (ATR) was presented by the Member Secretary. The Chairman and RAC members expressed their views and offered expert suggestions for improving/strengthening research and extension activities of the Institute.

The Chairman, RAC, Dr. C. L. Acharya, in his opening remarks, appreciated the progress made by the institute during the last three years. He emphasized that the institute has now reached to a stage where its technologies demonstrated should be taken to farmers' fields through a farmer-participatory approach, ensuring wider adoption and validation. He also encouraged all scientists to generate robust scientific data and well-documented reports to strengthen the institute's research contributions.

Dr. Masood Ali, Member, RAC, stressed the need to optimally utilize existing resources for developing Integrated Farming System (IFS) models with minimum external dependency. He emphasized that each project team should include diversified expertise to enhance scientific output and sustainability.

Dr. Rakesh Kumar, Member, RAC, appreciated the multidisciplinary strength of the scientific staff. He emphasized the importance of close coordination among scientific and administrative personnel to fulfill the institute's mandate and to efficiently execute council-assigned tasks and time-bound activities with the approval of the competent authority.

On the next morning, i.e., 21st November 2025, RAC members along with all institute scientists visited the institute research field for an interaction. The members interacted with the PIs of different institute projects and reviewed the progress of ongoing field experiments. Based on their observations, the RAC members suggested a few minor recommendations for incorporation.

A visit of farmers field involved in initiative program was made in forenoon of 21st November. An interaction meeting with progressive farmers and officials from the State Agriculture Department was conducted on 21st November 2025 in the presence of the RAC Chairman, Members, and institute staff. The RAC members advised scientists to strengthen their work through farmer-participatory approaches to enhance livelihood security.

An interaction meet with all scientist regarding ongoing research activities and future line of work was done. Newly joined scientists had presented their research concept considering the mandate and their expertise. RAC provided valuable suggestions to involved their upcoming research activities like microbial studies of natural farming system, waterlogged areas, major health problem and their management of fish, nutrient management of livestock for better health and milk production etc.



3rd meeting of the 2nd RAC conducted during 20-21 November 2025

After detailed and comprehensive interactions with scientists and farmers, the following recommendations were made:

- Each scientist should develop problem-oriented research proposals, submit at least one externally funded project
- RAC advised scaling up (i) fish-based, (ii) goat-based, and (iii) land-shaping technologies to farmers field at least for 3 years for impact assessment
- All IFS projects must assess land and water productivity, utilize available resources to minimize external dependency and conduct benchmark survey and post-impact assessments
- RAC advised to scaling up the technology at farmers field, the institutes should come up with a proposal to establish one KVK in flood prone district. For this consultation with state government and ICAR should be done
- Value addition in crop residues under IFS should be done to enhances their nutritional values in ruminants
- Inter-institutional linkages may be established to take help of larger institutes doing commodity-based research to seeking assistance in field like biotechnology, bioinformatics, sequencing, artificial intelligences (AI), machine learning (ML) etc. The RAC meeting ended with concluding remarks, recommendations and vote of thanks.

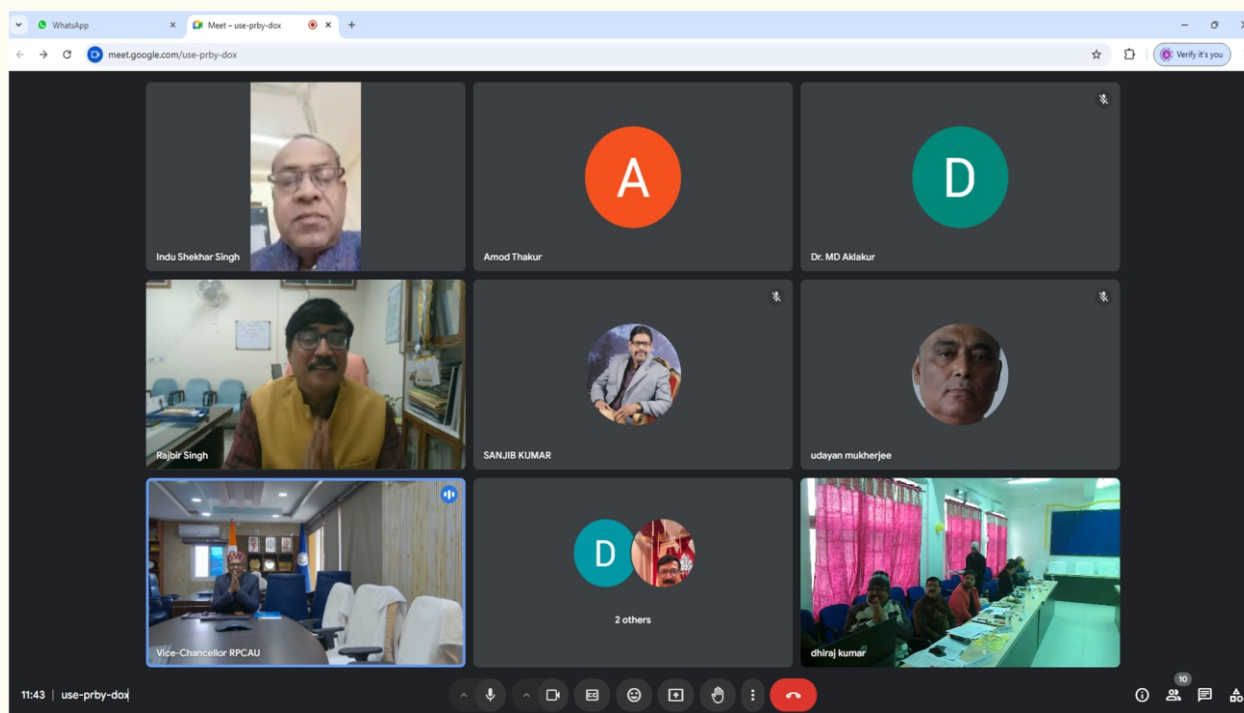
Meeting of the Institute Management Committee (IMC)

During 2025, the institute conducted two IMC meetings (second and third) on 21 January and on 27 March 2025. The meeting was chaired by Dr. S.K Purbey, Director (A), ICAR-MGIFRI, Motihari, and members present in the meetings included Dr. Rajbir Singh, ADG (AAF&CC), NRM Division, ICAR Hqrs., New Delhi; Dr. P.S. Pandey, Vice-Chancellor, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar; Dr. Udayan Mukharjee, Professor and Head, RPCAU, Pusa, Samastipur; Dr. A.K Thakur, Pr. Scientist, ICAR-IIWM, Bhubaneswar Odisha; Dr. Indu Sekhar Singh, Pr. Scientist, ICAR-NRC Makhana, Darbhanga; Dr. Md. Aklakur Rehman, Scientist, Motipur Centre, (ICAR-CIFE, Mumbai), Muzaffarpur; Shri Kush Baghla, FAO, NRC on Litchi, Muzaffarpur; D.K Sapra, Administrative Officer, ICAR-MGIFRI, Motihari etc. The meeting commenced with the ICAR song, followed by the welcome address by the Chairman, IMC, MGIFRI,

and a presentation on the glimpses of ICAR-MGIFRI by Dr. Koushik Banerjee, Scientist & I/C PME. The F&AO, ICAR-MGIFRI outlined the budget vs. expenditure and physical as well as financial achievements. It was noted that there are no CGHS empaneled hospitals in Motihari, and the employees of ICAR-MGIFRI, Motihari are facing difficulties due to this. A committee from the Institute visited some private hospitals to provide services on CGHS/CS(MA) rates.

The following private hospitals viz; Rahmania Medical Centre, Mani Hospital, Harsh Hospital and Motihari Institute of Orthopedics Traumatology and Spine (MIOTS) gave their written consent to provide medical services on CGHS/CS(MA) rates.

The IMC recommended empaneling these four hospitals for medical treatment of the employees of ICAR-MGIFRI, Motihari under CGHS/CS(MA) Rules. Additionally, works related to furnishing of laboratories, farm area, campus development activities, vermicompost unit, storage shed, construction of manure pits, and office buildings were discussed. It was decided that these works would be carried out through CPWD and as per the rules/delegation of powers in the matter. The meeting was followed by an address by Dr. Rajbir Singh, ADG (NRM), ICAR. Discussions on agenda items and supplementary agenda items, if any, were held, followed by final recommendations. The meeting concluded with a vote of thanks.



IMC meeting conducted at the institute on 21 January 2025

Human Resource Development

Training, awareness campaign & capacity building of stakeholders/ farmers

Sl No	Duration	Title of the training	Location	Funded by	Total participants	Coordinators
1	04 to 05 March 2025	Integrated farming system models for sustainable livelihood	ICAR-MGIFRI, Motihari	SCSP ICAR-MGIFRI, Motihari	100	Dr. Shreya Nivesh, Dr. Neela Madhav Pattnaik, and Rakesh N.
2	21 to 23 March 2025	Training Program cum Exposure Visit on "Integrated Farming System for flood and waterlogged ecosystems"	ICAR-MGIFRI, Motihari	ICAR-MGIFRI, Motihari	100	Dr. S.K. Singh Dr. Neela Madhav Patnaik
3	24 to 28 March 2025	Integrated Farming practices for enhancing farmers income in flood-prone and waterlogged ecosystem	ICAR-MGIFRI, Motihari	SCSP ICAR-MGIFRI, Motihari	90	Dr. Shreya Nivesh, Dr. Geeta and Rakesh N.
4	25 to 27 March 2025	Fish Farming for Livelihood Improvement & Entrepreneurship Development: Training & Exposure Visit	ICAR-MGIFRI, Motihari	Uttar Pradesh Matsya Palak Kalyan kosh Yojna' of Govt. of UP	22	Dr. Ravi Kumar Er. V Paradkar
5	29 May to 10 June 2025	National outreach initiatives titled "Viksit Krishi Sankalp Abhiyaan" scheduled during the pre-kharif season 2025	Various villages of East Champaran and Sheohar District	ICAR-MGIFRI, Motihari	252 villages	Director and all the scientists of the institute
6	16 to 20 July 2025	Jal Bharaw Paaristhitiki Antargat Vaigyanik tarike se Pashupalan dwara kisanon ki Aajivika me Vridhi	ICAR-MGIFRI	ICAR-MGIFRI	42	Dr. P. K. Bharti Dr. A K Jadhav Dr Krishna Moham
7	16 to 20 July 2025	Scientific livestock farming for enhancing livelihood of farmers in waterlogged ecosystem	ICAR-MGIFRI	ICAR-MGIFRI	46	Dr. P K Bharti
8	11 to 13 September 2025	Backyard poultry rearing for improving livelihood of farmers in flood-prone and waterlogged ecosystems	ICAR-MGIFRI	BAMETI, Patna	32	Dr. P K Bharti Dr. Naveenkumar B. Patil

9	15 to 17 September 2025	Training cum input distribution under NEH	KVK west and South Tripura	NEH ICAR-MGIFRI	110	Dr. P K Bharti Dr. Neela Madhav Patnaik
10	01 to 15 November 2025	Jan Jatiya Gaurab Diwas with theme Jan jatiya Gaurav Varsh Pakhawara	MGIFRI and other villages	ICAR-MGIFRI	142	Dr. V. S. Meena
11	26 to 28 November 2025	Scientific Nursery Management of Horticultural Crops	College of Agriculture , Pasighat, Arunachal Pradesh	ICAR-MGIFRI	40	Dr. S.K. Purbey and Dr. Jadhav Amol Kailas
12	03 to 05 December 2025	Practical training on nature-based formulation and application for plant protection	ICAR-MGIFRI, Motihari	BAMETI, Patna	26	Dr. Naveenkumar B. Patil Dr. Neela Madhav Patnaik
13	15 to 19 December 2025	जलवायु स्मार्ट कृषि हेतु फसल विविधिकरण: लाभ एवं लचीलापन	ICAR-MGIFRI, Motihari	ATMA Siwan	21	Dr. A K Jadhav Dr. V S Meena
14	29 December 2025 to 02 January 2026	Climate smart farming under changing climatic condition	ICAR-MGIFRI, Motihari	ATMA Siwan	20	Dr. S.K. Singh Dr. Koushik Banerjee

Glimpses of Training & Capacity building/ National Campaign/ Awareness activity/ Workshop organized at ICAR-MGIFRI during 2025



Exposure visits of farmers from KVK Madhopur on IFS, conducted at ICAR-MGIFRI on 7 January, 2025



ICAR-MGIFRI participated with an exhibition stall in Krishi Mela at KVK Madhopur, during 10 March 2025



ICAR-MGIFRI conducted training program cum exposure visit on integrated farming system for flood and waterlogged ecosystems during 21-23 March 2025 under FFP scheme



ICAR-MGIFRI participated with an exhibition stall in Krishi Mela at KVK Piprakothi, during 08-10 February 2025



ICAR-MGIFRI organized 1st National seminar on Agri-diversification and eco-regional farming during 4-5 March 2025



ICAR-MGIFRI conducted an exposure visit on Mustard crop (var RH 761) on 24 March 2025 under FFP scheme



ICAR-MGIFRI conducted training program at Village Karariya Bairagi Tola on IFS practices for enhancing farmers income in flood-prone and waterlogged ecosystem during 24-28 March 2025 under SCSP scheme



Field day conducted for Wheat crop (var DBW 187) at village Tetariya on 25 March 2025 under FFP scheme



Hands-on training program on Advanced Enterprise-Based Integrated Farming Systems for Livelihood Security conducted at Harpur village during 26-30 March, 2025 under SCSP scheme



Animal health camp organized at Kuwarpur village, Chakia block of East Champaran district on 13 June 2025



ICAR-MGIFRI conducted training on Jal Bharaw Paaristhitiki Antargat Vaigyanik tarike se Pashupalan dwara kisanon ki Aajivika me Vridhi during 16 to 20 July 2025



One-month internship/summer training program to B.Sc. students on IFS conducted during 24 June to 23 July 2025



Bameti Sponsored training on Backyard poultry rearing was conducted during 11 to 13 September 2025



ICAR-MGIFRI participated with an exhibition stall in Krishi Mela at KVK Piprakothi, during 17-19 September 2025



ICAR-MGIFRI conducted Tribal Farmers Conclave cum Exhibition cum training on IFS for climate resiliency enhancing livelihood of tribal farmers under NEH held at Dima Hasao, Assam during 06-08 November 2025



Bameti sponsored training on Practical training on on Crop diversification-based climate smart agriculture, during 15-19, December, 2025



Field day was conducted on the use of Nutraceuticals to Boost Animal and Fish Health, on 12 November 2025 at Kuwarpur, Chakia



ICAR-MGIFRI conducted training on Scientific Nursery Management of Horticultural Crops at College of Agriculture, Pasighat, Arunachal Pradesh during 22-24 December 2025



Bameti sponsored training on Practical training on Nature based formulation and application for plant protection, during 3-5, December, 2025



ICAR-MGIFRI conducted 5-day sponsored training on Climate smart farming under changing climatic condition during 29 December 2025 to 02 January 2026

Training and capacity building undergone by scientists

Name & designation	Subject	Organization	Duration
Dr. P. K. Bharti Sr. Scientist Dr. Koushik Banerjee, Scientist	Attended online training: Navigation Springer Nature Platforms Exclusively for ONOS Members	Springer Nature	19 March 2025
Dr. Pratapa M G Scientist	114 th Foundation Course for Agricultural Research Service (114 th FOCARS)	ICAR- NAARM, Hyderabad	07 July to 16 October 2025
Dr. Lamella Ojha Scientist	114 th Foundation Course for Agricultural Research Service (114 th FOCARS)	ICAR- NAARM, Hyderabad	07 July to 16 October 2025
Dr. Subham Mukherjee Scientist	114 th Foundation Course for Agricultural Research Service (115 th FOCARS)	ICAR-NAARM, Hyderabad	11 August to 25 November 2025
Dr. Shreya Nivesh Scientist	One week training programme on Machine Learning Techniques for Sustainable Water Resources Management	National Institute of Hydrology (NIH), Roorkee, Uttarakhand	18 to 22 August 2025
Dr. Pratapa M G Scientist	Institute Orientation Training Programme	ICAR- MGIFRI, Motihari	27 October to 28 November 2025
Dr. Lamella Ojha Scientist	Institute Orientation Training Programme	ICAR- MGIFRI, Motihari	27 October to 28 November 2025
Dr. S. K. Singh Pr. Scientist	Training of Masters Trainers on Vigilance Perspectives	ICAR-NAARM, Hyderabad	17 to 19 November 2025
Dr. Pratapa M G Scientist	Professional Attachment Training (PAT)	ICAR-CIFE, Mumbai	01 December 2025 to 27 February 2026
Dr. Lamella Ojha Scientist	Professional Attachment Training (PAT)	ICAR-NIANP, Bengaluru	01 December 2025 to 27 February 2026
Dr. Subham Mukherjee Scientist	Institute Orientation Training Programme	ICAR-MGIFRI, Motihari	08 December 2025 to 07 January 2026

Participation in Seminar/ Symposium/ Conference/ Workshop/ Webinar

Sl No	Scientist	Seminar/ Symposium/ Conference/ Workshop/ Webinar	Date	Organizer
1	All the scientist of the institute	1 st National Seminar on “agri- diversification and eco regional farming”	04 to 05 March 2025	ICAR- MGIFRI, Motihari
2	Dr. S. K. Singh, Dr. Koushik Banerjee, Dr. A. K. Jadhav	1 st International Farming Systems Conference: Transforming Food, Land and Water Systems under Global Climate Change	07 to 09 March 2025	ICAR-IIFSR, Modipuram.
3	Mr. Rakesh N	VIII Post Graduate Research Conference	26 to 27 July 2025	UAS, Dharwad, Karnataka
4	Dr. S.K. Purbey, Dr. S. K. Singh, Dr. P K Bharti, Dr. V. S. Meena, Dr. Koushik Banerjee, Dr. Neela Madhav Patnaik	Consultation workshop on Transforming Food, Land, and Water Systems to Combat the Climate Crisis	16 August 2025	ICAR-MGIFRI, Motihari

5	Dr. V. S. Meena	National Conference on System of crop intensification for climate - smart, water and nutrient efficient agriculture.	05 September 2025	ICAR-IIWM, Bhubaneswar, Odisha
6	Dr. S.K. Purbey, Dr. P K Bharti, Dr. V. S. Meena, Dr. Koushik Banerjee, Dr. Neela Madhav Patnaik	Technology and Knowledge Sharing Workshop under NEH Component	22 to 23 September 2025	Jointly organized by ICAR-RCER Patna and ICAR-MGIFRI, Motihari
7	Dr. A K Jadhav	5 th National Hindi Scientific Symposium' organized under "Hindi Pakhwada Samaroh	25 September 2025	ICAR-NINFET, West Bengal
8	Dr. Lamella Ojha	7 th Annual Conference on Bio-Agricultural Research	12 December 2025	ICAR-NIANP, Bengaluru

Lecture delivered as resource person in training outside the institute

Sl No	Scientist	Lecture topic	No. of lectures	Location
1	Dr. S.K. Singh	15 days training on integrated nutrient management	06	KVK, Piprakothi
2	Dr. P. K. Bharti	"Housing and feeding management of livestock" on 27.03.2025 during the training program "IFS for enhancing farmer's income in flood prone and waterlogged ecosystem under SCSP scheme" wef 24 to 28 March 2025 (5 days, off campus) for farmers	01	Village-Kunwarpur, Parsurampur, Block-Chakia, Dist.-East Champaran
3	Dr. P K Bharti	Housing, feeding and disease management of livestock" on 29.03.2025 during the training program "Advance enterprise-based IFS for livelihood security" wef 26 to 30 March 2025 (5 days, off campus) for farmers	01	village-Harpur, Block-Chakia, Dist.-East Champaran
4	Dr. Naveen Kumar B. Patil	Importance of bio-inoculants such as Rhizobium, Azotobacter, Phosphate solubilizer, Azospirillum, Blue Green Algae, Trichoderma etc	04	KVK, Piprakothi
5	Dr. Koushik Banerjee	15 days training on integrated nutrient management	04	KVK, Piprakothi
6	Er. Vikas Paradkar	Delivered lecture in 58 batch of 15 days INM Training Programme at KVK Piprakothi on "Maximizing nutrient efficiency through integrated farm machinery and power engineering"	01	KVK, Piprakothi
7	Dr. Shreya Nivesh	Weather based irrigation scheduling for better water use efficiency - Fifteen days INM training programme organized at KVK, Madhopur during 10 to 24 January 2025	01	KVK, Madhopur
8	Dr. Shreya Nivesh	Soil and water conservation measures for agricultural sustainability under waterlogged conditions - Five days training programme on Integrated Farming practices for enhancing farmers income in flood-prone and waterlogged ecosystem under SCSP scheme organized at Kunwarpur village, East-Champaran during 28 to 30 March, 2025	01	Kunwarpur village

9	Dr. Shreya Nivesh	Pond based IFS models for effective utilization of land and water resources - Five days training programme on Integrated Farming practices for enhancing farmers income in flood-prone and waterlogged ecosystem under SCSP scheme organized at Kunwarpur village, East-Champaran during 28 to 30 March, 2025	01	Kunwarpur village
10	Dr. Shreya Nivesh	Water and waste management in horticultural crops. (Drip irrigation, Rainwater harvesting etc.) - Five days training programme on "Advance enterprise based integrated farming system for livelihood security" organized at Harpur village, East-Champaran during 26 to 30 March, 2025	01	Harpur Village
11	Dr. A. K. Jadhav	Importance and Scope of Nursery Management in Horticultural Crops	01	College of Agriculture, CAU (Imphal) Pasighat, Arunachal Pradesh
12	Dr. A. K. Jadhav	Production Techniques and Characteristics Features of Kuroda Potato Variety during Result Demonstration on "Varietal Demonstration of Potato Variety Kuroda under Farmers First Project	01	Tetaria Block East Champaran, Bihar
13	Dr. Neela Madhav Patnaik	Choosing right enterprise in IFS	01	ICAR- KVK, South Tripura
14	Dr. Neela Madhav Patnaik	Components of IFS: crop diversification, horticulture and agroforestry	01	ICAR- KVK, West Tripura
15	Dr. Neela Madhav Patnaik	Choosing the Right Enterprise for Integrated Farming System Online: 21 Days National Training Course (NTC-2025) organized by OUAT, Bhubaneswar, Odisha & National Agriculture Development Cooperative Ltd. (NADCL) Baramulla, J & K from August 05 to 25, 2025	01	Virtual mode, conducted by OUAT, Bhubaneswar
16	Dr. Neela Madhav Patnaik	Formation of FPOs for enhancing livelihood	01	KVK, Piprakothi
17	Dr. Subham Mukherjee	15 days training on integrated nutrient management	03	KVK, Piprakothi

Glimpses of Institute Activities

1st National Seminar on Agri-Diversification and Eco-Regional Farming, 4-5 March 2025, ICAR-MGIFRI, Motihari, Bihar, India

In India, agriculture plays a critical role in ensuring food and nutritional security, economic stability, and ecological balance. With increasing pressure of climate change, population growth, and resource constraints, conventional farming practices need to evolve. Agricultural diversification and eco-regional farming emerge as pivotal strategies to address these challenges, offering sustainable solutions tailored to specific ecological and socio-economic contexts. By leveraging region-specific strengths and encouraging diversity, we can pave the way for resilient and prosperous agricultural systems. The theme of the seminar resounds deeply with the current global imperative for farming systems diversification in relation to climate change mitigation and eco-regional farming. Sustainable farming system through agri-diversification is the key to achieving Sustainable Development Goals (SDGs), particularly for country like India. Agricultural diversification is needed to reduce risk for farmers by spreading their production across multiple crops or livestock types, which helps mitigate the impact of weather fluctuations, market price swings, and pest outbreaks, ultimately leading to more stable income and improved food security. Conventional farming system in unsuitable ecoregions, however, has generated several environmental problems such as depletion of ground water, pollution of air, degradation of soil and aggravation of climate change. All these degenerative factors are taking toll on the productivity, profitability and sustainability in farming system. To achieve sustainable and environment-friendly farming practices, the crop diversification should be carried in the region where its environmental footprint is the minimum. This can be accomplished with eco-regional approach. Ecoregions are geographical regions

with similar ecological, soil and climatic conditions. Agricultural diversification in suitable ecoregions and site-specific improved technologies will be helpful in enhancing productivity, profitability, climate resilience and sustainability of farming in the country.

To address all these important aspects, the ICAR- Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Piprakothi, Motihari in collaboration with BAMETI, Patna, Government of Bihar organized 1st National Seminar on "Agricultural Diversification and Eco-Regional Farming during November 04-05 March, 2025 at IACR-MGIFIR Auditorium, Motiahari, Bihar, India. The main objective of the conference was to promote Agri diversification and eco regional farming.

Inaugural function

Sl. N	Name	Designation
1.	Dr. Inderjeet Singh	Vice-Chancellor, BASU, Patna (Chief Guest)
2.	Dr. S. K. Chaudhari	Former DDG (NRM), ICAR, New Delhi
3.	Dr. Prason Dutta Singh	Dean, Mahatma Gandhi Central University, Motihari
4.	Dr. A.K. Singh	Director Research, RPCAU, Pusa
5.	Dr. A.K. Singh	Director Research, BAU, Sabour
6.	Dr. K.G. Mandal	Former Director, ICAR-MGIFRI, Motihari
7.	Dr. Sushil Kumar Purbey	Chairman, National seminar, and Acting Director, ICAR-MGIFRI, Motihari
8.	Shri Sanket Nayak	SBI Branch Manager, Motihari
9.	Dr. Mahantesh R. Nayak	Professor & Head, UAS Dharwad
10.	Shri Mayank Patel	Managing Director, Innovac Bioscience Pvt. Ltd.
11.	Dr S.K. Singh	Convener, National seminar and Pr. Scientist, ICAR-MGIFRI, Motihari

After welcoming the guests, the ceremonial lamp was lit, followed by the ICAR song. This was followed by a felicitation ceremony, where the dignitaries were honored with shawls, mementos, and bouquets as a token of respect and appreciation. The welcome address was delivered by Dr. Sushil Kumar Purbey, Acting Director, ICAR-MGIFRI, Motihari, who emphasized the significance of agricultural diversification and eco-regional farming in addressing the challenges of sustainable agriculture. This was followed by addresses from the dignitaries on the dais, who shared their insights and perspectives on the theme of the seminar. A key highlight of the session was the release of the publications, including Souvenir of Abstracts and ICAR-MGIFRI at a Glance.

The Guest of Honor, Former DDG (NRM, ICAR, New Delhi), Dr. S. K. Chaudhari, shared his insights through an audio-video message, highlighting the advancements and prospects of Integrated Farming Systems. His message provided valuable guidance and inspiration for sustainable agricultural practices. The chief guest, Dr. Inderjeet Singh, Vice-Chancellor, BASU, Patna, then delivered his address, focusing on the role of agricultural diversification in enhancing productivity and sustainability. The inaugural session concluded with a formal vote of thanks, expressing gratitude to all dignitaries, organizers, and participants for their contributions in making the event a success.



Inauguration session and unvelling the publications of National seminar held during 4-5 March 2025 at ICAR-MGIFRI

Farmer participation and exhibition stall display

Approximately 400 farmers participated in the exhibition program on day 1 (04.03.2025) and visited the stalls that were put up in the institution premises. They actively participated in interactions with government officials and scientists, discussing key issues and sharing their experiences. The exhibition featured stalls from various ICAR institutes, Krishi Vigyan Kendras (KVKs), and private organizations, showcasing advancements in agricultural technologies and innovations. For day-2 (05.03.2025), approximately 550 farmers mostly belonging to SC category participated in the plenary session and farmer scientist interface for an enriching experience on Agri diversification and IFS opportunities for increasing income. In addition to SCSP farmers, for two days, about 100 farmers sponsored by BAMEITL, Patna; 100 farmers from Farmers FIRST project, 130 progressive farmers and ATM/BTM of ATMA, Motihari participated in the event making the exhibition display of stall to fulfill its objective of knowledge sharing platform with stakeholders.

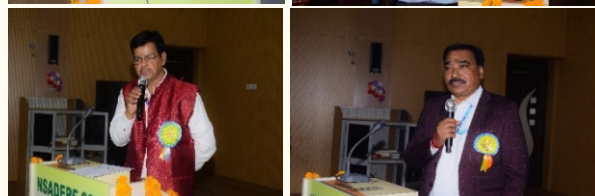




Glimpses of exhibition stall and farmers participation during the National seminar

Technical sessions

After inaugural session, four technical sessions were started one by one. Session 1 focused on "Strategies and Techniques to Promote Agri-Diversification and Eco-Regional Farming." It was chaired by Dr. K.G. Mandal, Ex-Director, ICAR-MGIFRI, Motihari & Principal Scientist, ICAR-CRIJAF, Barrackpore, with Dr. Sanjeev Kumar, Principal Scientist and Head, Crop Research, ICAR-RCER, Patna as the Co-Chairperson. The rapporteurs for the session were Dr. S. K. Singh, Principal Scientist, ICAR-CISH, Lucknow, and Dr. Ravi Kumar, Scientist, ICAR-MGIFRI, Motihari. The session included lead lectures by Dr. K.G. Mandal on "Strategies and Techniques to Promote Agri-Diversification and Eco-Regional Farming in Flood-Prone and Waterlogged Ecosystems," Dr. Sanjeev Kumar on "Integrated Farming Systems: A Pathway to Resource Efficiency and Sustainability in the Indo-Gangetic Plains," and Dr. Sushil Kumar Purbey, Director, ICAR-MGIFRI, Motihari, on "Perspective of Horticulture-Based Integrated Farming System in Waterlogged and Flood-Prone Areas." This was followed by oral presentations of the participants in hybrid mode, after which the poster presentation session was conducted under Session 1, chaired by Dr. A.K. Singh, BAU, Sabour, with Dr. A.P. Singh, KVK, Madhopur, as the Co-Chairperson, and Dr. Shreya Nivesh, ICAR-MGIFRI, as the rapporteur.



Technical and plenary sessions conducted during the seminar

Session 2, titled "Integration of Modern Tools and Techniques for Problem-Solving Approaches in Agri-Diversification," was chaired by Dr. A.K. Singh, Director Research, RPCAU, PUSA, Samastipur, with Dr. P.K. Pranav, Associate Professor, RPCAU, Pusa, Bihar, as the Co-Chairperson. The rapporteurs for the session were Er. Vikas Paradkar, Scientist, ICAR-MGIFRI, Motihari, and Dr. Ramulu Chelpuri, SMS, KVK, Madhopur. Lead lectures were delivered by Dr. P.K. Pranav on "Application of Drone and AI in Agriculture" and Dr. A.K. Singh on "Integration of Modern Tools and Techniques for Problem-Solving Approaches in Agri-Diversification." This was

followed by oral presentations of the participants in hybrid mode and the poster presentation session, which was chaired by Dr. A.K. Singh, KVK ATARI, with Dr. Abhay Kumar, KVK Parsauni, as the Co-Chairperson and Dr. Geeta and Mrs. Haritha Mohan, ICAR-MGIFRI, as the rapporteurs.

The first day concluded with an evening tea and light refreshments, followed by a cultural program and dinner at the Institute Guest House, ICAR-MGIFRI, Motihari.

Plenary Session

On the second day, the seminar commenced with the Plenary Session, focusing on the Government Official, Farmer, and Scientist interface. The Chief Guest for the session was Shri Radha Mohan Singh Ji, Hon'ble Member of Parliament, Motihari, and Former Minister of Agriculture and Farmers' Welfare, Government of India. The session was chaired by Dr. S. K. Purbey, Acting Director, ICAR-MGIFRI, with Dr. S. K. Singh, ICAR-MGIFRI, as Co-Chairperson. The rapporteur for this session was Mr. Amol Kailas Jadhav. Concurrent to the Plenary Session, Sessions 3 and 4 were conducted, encompassing oral and poster presentations of the participants. During the farmer-scientist interface in the presence of govt. officials and public representatives' various issues related to agriculture were discussed in detail with the farmers focusing on flood and waterlogged ecosystem and harnessing the potential of various government schemes for benefit of farmers.



Valedictory session and farmers-scientist interaction at National seminar

Session 3 was centered on the theme 'Natural Resource Management under Agri-Diversification and Eco-Regional Farming. It was chaired by Dr. Anup Das, Director, ICAR-RCER, Patna, with Dr. A. Kundu, Head, CoEIB, RGM, Piprakothi, as Co-Chairperson. The rapporteurs for the session were Dr. Koushik Banerjee, Scientist, ICAR-MGIFRI, and Dr. Santhosh Kumar, Associate Professor, PDUCH&F, Piprakothi. The session featured lead lectures by Dr. A.K. Singh, Director, Research, BAU, Sabour, on 'Agri-Diversification through Integrated Farming

System for Diverse Ecologies of Bihar, Dr. A.K. Singh, ATARI, Kanpur, UP, on 'Unlocking the Potential of Integrated Farming Systems in Low-Lying Areas of Eastern Uttar Pradesh, Dr. A. Kundu, Head, CoEIB, RGM, Piprakothi, on 'Importance of Indigenous Breed of Cattle for Sustainable Livestock Production System, Dr. Sanjay Kumar Singh, Division of Crop Improvement and Biotechnology, ICAR-Central Institute for Subtropical Horticulture, Lucknow on 'Use of Diversity of Indigenous Seedling Mango and Minor Fruits of Bihar and its Probable ITKs and Dr. Koushik Banerjee, Scientist, ICAR-MGIFRI, on 'Climate Smart Agricultural Practices for Increasing Productivity under Flood Prone and Waterlogged Ecosystem in Eastern India'. The lead lectures were followed by the oral presentations of the participants in hybrid mode. It was followed by the poster presentation of participants. The Chairperson for poster presentations was Dr. R. K. Jha, Dean, PDDUCHF, Piprakothi, with Dr. D. Pandey, ICAR-CISH, Lucknow, as Co-Chairperson. The rapporteurs were Dr. P. K. Bharti, ICAR-MGIFRI, and Dr. Krishna Mohan Kumar, RGM Piprakothi.

Session 4 focused on 'Socio-Economic Approaches and Policies to Build Sustainable Food Systems.' It was chaired by Dr. Mahantesh R. Nayak, Head & Professor, Department of Agricultural Economics, UAS, Dharwad, with Dr. Ujjwal Kumar, Principal Scientist and Head, Division of Socio-Economic and Extension, ICAR-RCER, Patna, as Co-Chairperson and Dr. Neela Madhav Patnaik, Scientist, ICAR-MGIFRI as rapporteur. The lead lecture was delivered by Dr. Mahantesh R. Nayak on 'Strengthening India's Sustainable Food System: The Role of Farmer Producer Organizations (FPOs) and Financial Institutions.' The lead lectures were followed by the participants' oral presentations in hybrid mode during Session 4. For the poster presentations in this session, Dr. Abhay Kumar (ICAR-RCER, Patna) served as the

Chairperson, with Dr. A. K. Singh (PDDUCH&F, RPCAU) and Dr. Shankar Jha (RPCAU, Pusa) as Co-Chairpersons. Mr. Rakesh N (ICAR-MGIFRI) officiated as the Rapporteur.

Valedictory function

Following these sessions, the Valedictory Session was conducted. The valedictory session was chaired by Dr. K. G. Mandal, Former Director, ICAR-MGIFRI, with Dr. S. K. Purbey, Acting Director, ICAR-MGIFRI, as Co-Chairperson. The esteemed guests included:

Sl.N	Name & Designation	Role
1.	Dr. K. G. Mandal, Former Director, ICAR-MGIFRI	Chairperson
2.	Dr. S. K. Purbey, Acting Director, ICAR-MGIFRI	Co-Chairperson
3.	Dr. A. Kundu, Project Director, Rashtriya Gokul Mission	Special Guest
4.	Dr. S. K. Singh, Principal Scientist, Division of Crop Improvement and Biotechnology, ICAR-CISH, Lucknow	Special Guest
5.	Dr. Mahantesh R. Nayak, Professor & Head, Department of Agricultural Economics, UAS, Dharwad	Special Guest
6.	Dr. S. K. Singh, Principal Scientist, ICAR-MGIFRI	Convener
7.	Dr. Koushik Banerjee, Scientist, ICAR-MGIFRI	Organizing Secretary

Following the welcome of guests, a summary of sessions was presented by the rapporteurs for each oral and poster presentation in all four sessions. This was followed by the distribution of certificates and prizes. The distinguished guests on the dais, including Dr. A. Kundu (Project Director, Rashtriya Gokul Mission, Piprakothi), Dr. S. K. Purbey (Co-Chairperson & Acting Director, ICAR-MGIFRI), and Dr. K. G. Mandal (Chairperson & Former Director, ICAR-MGIFRI), addressed the gathering in this sequence. The session concluded with a vote of

thanks delivered by Dr. Koushik Banerjee, marking the formal closure of the seminar.

The two-day National Seminar on "Agricultural Diversification and Eco-Regional Farming" at ICAR-Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Piprakothi, Motihari, Bihar, successfully facilitated knowledge exchange among scientists, policymakers, farmers, and industry representatives. Discussions across various technical sessions highlighted the critical role of integrated farming systems, resource-efficient technologies, and socio-economic policies in enhancing agricultural sustainability. Key recommendations emerging from the seminar included promoting climate-smart agricultural practices, leveraging modern tools like AI and drones for precision farming, strengthening farmer-producer organizations (FPOs), and fostering collaboration between research institutions and stakeholders for holistic agri-development. The event underscored the importance of eco-regional approaches to address challenges posed by climate change, waterlogging, and land degradation in vulnerable regions. Around 180 delegates and 800 farmers invited/ attended the 2 day national seminar. There were 16 lead/ key note/ invited lectures and 50 oral presentations were delivered in different sessions in the seminar. 86 posters were presented by the delegates. The seminar concluded with a consensus on the need for continued research, policy support, and farmer-centric innovations to drive sustainable agricultural diversification. ICAR-MGIFRI, in collaboration with its partners, remains committed to furthering these initiatives through research, capacity building, and field-level implementation.

Major recommendations

1. Flood-prone and waterlogged ecosystem:

A comprehensive analysis of flood-prone and waterlogged eco-regions, vulnerability assessment, and hotspot mapping is crucial for sustainable agricultural planning in eastern Indian states like Bihar, West Bengal, Assam,

and Odisha. Characterizing these regions based on climatic, soil, and hydrological factors helps identify risks such as floods, droughts, and soil degradation. Situation analysis enables targeted interventions for climate resilience, while hotspot mapping highlights vulnerable areas requiring immediate attention. Such data-driven approaches support adaptive strategies for sustainable land use, disaster mitigation, and agricultural diversification in these ecologically sensitive states.

2. Enhancing Climate-Resilient Agriculture in Flood-Prone Areas:

Promoting agricultural sustainability in flood-prone regions, through holistic approach integrating crop diversification, integrated farming, and water management is essential. Cultivating flood-tolerant crops like deep-water rice, Makhana, and water chestnut, along with multiple cropping patterns, enhances productivity. Integrated farming systems, including rice-fish culture, duck-fish farming, and livestock integration, provide additional income and improve land use. Constructing drainage canals, sunken beds, and pond refuges prevents water stagnation and enables rainwater harvesting. Using bio-fertilizers and organic matter enhances soil fertility. These strategies together strengthen climate resilience and promote sustainable agriculture. Strengthening multi-enterprise combinations viz., agriculture, horticulture, agro-forestry, animal components, fishery, poultry and mushroom unit will provide more resiliency under the face of climate change.

3. Transforming Bihar's Waterlogged Agriculture through Resilience and Diversification:

Adopting short-duration, flood-tolerant varieties of paddy and pulses, along with solar-powered water pumps and drip irrigation, can enhance climate resilience and water efficiency. Integrated farming systems combining crops, fish, agroforestry, and livestock will improve productivity and livelihoods. Financial assistance for diversified farming, land

shaping, and mechanization, along with strengthening FPOs, can help farmers access better markets and inputs. Training and capacity building programs on IFS technology in terms of increasing climate resiliency and small processing units for Mushroom, Makhana, water chestnut, fish, and aquatic crops will boost value addition. Combining traditional knowledge, modern technology, and strong policy support can transform Bihar's waterlogged regions into a sustainable agricultural hub. Infrastructure building in the form of land shaping, excavation of farm ponds for water conservation, animal shades in the farmer's field through PPP mode will help in suitable use of flood-prone and waterlogged ecosystems.

4. Leveraging Technology for Sustainable and Climate-Resilient Agriculture:

The integration of drones and AI enables precise crop health monitoring, optimizing inputs while minimizing environmental impact. Spectral indices facilitate crop health monitoring, guiding targeted soil restoration efforts. Drone-based pest management reduces human dependency, promoting eco-friendly cultivation. Additionally, reproductive technologies like follicular dynamics studies and embryo transfer enhance breeding efficiency and genetic diversity in indigenous cattle. By combining advanced technology with sustainable practices, agricultural productivity and resilience can be significantly improved.

5. Advancing Agricultural Diversification with Modern Technologies:

The integration of modern tools and techniques enhances sustainability and resilience in agriculture. Laser land leveling improves water-use efficiency, while innovative water models support diversified cropping in water-stressed areas. Low-cost equipment and machinery aid farming in waterlogged conditions, and specially designed goat feeding mangers improve livestock management. Additionally, modern processing

techniques add value to Makhana, boosting farmers' income. By leveraging these advancements, agricultural productivity and resource efficiency can be significantly enhanced.

6. Strengthening Farmer Empowerment through Financial Inclusion and Institutional Support:

Enhancing financial inclusion, accessible credit, and insurance facilities is crucial for reducing financial risks in agriculture, especially for farm women. Strengthening FPOs, cooperatives, and NGOs can improve farmers' livelihoods by providing better market linkages and income diversification. Government agencies and innovative extension models, may play a vital role in technology adoption and price realization. A robust institutional framework can empower farmers, ensuring sustainable growth and resilience in the agricultural sector.

7. Strengthening Agricultural Extension and Policy Support for Sustainable Farming:

A collaborative approach between ICAR and KVKs can enhance participatory extension, ensuring efficient knowledge dissemination among farmers. Social inclusion, particularly of women, through millet-based food systems can improve empowerment and nutritional security. Government schemes like ARYA and Lakhpatri Didi Yojna should be promoted among rural youth using innovative extension tools to boost entrepreneurship and employment. A strong policy framework involving multiple stakeholders is essential for developing sustainable food systems while enhancing the socio-economic well-being of farming communities.

8. Advancing Sustainable and Climate-Resilient Agriculture through Diversification and Eco-Regional Farming:

The findings highlight the importance of diversification and ecoregional farming for sustainability and resilience. The genetic diversity of Aonla can enhance region-specific breeding programs, improving crop adaptability. Soil health strategies like biochar,

brown manuring, and organic amendments support long-term fertility and moisture retention, crucial for rainfed and degraded lands. Climate-smart approaches, including flood mapping and integrated farming, optimize land use while reducing risks. Eco-friendly pest management enables safer cultivation, while efficient water and fertilizer use, such as drip fertigation, enhances resource efficiency. Addressing arsenic contamination ensures safe diversification, and bamboo cultivation promotes agroforestry-based economic alternatives.

Collaborators of the national seminar

The ICAR - Mahatma Gandhi Integrated Farming Research Institute (MGIFRI), Piprakothi, Motihari, Bihar, India expresses its sincere gratitude to the Indian Council of Agricultural Research (ICAR), New Delhi, Bihar Agricultural Management & Extension Training Institute (BAMETI), Patna, Bihar, Dr. Rajendra Prasad Central Agricultural University (Dr.RPCAUI), Pusa, Samastipur, Bihar, ICAR Research Complex for Eastern Region (ICAR-RCER) Patna, Bihar, ICAR Agricultural Technology Application Research Institute (ATARI), Patna, INNOVAC Bioscience Pvt. Ltd. Savli, Vadodara, Gujarat, ATMA East Champaran, Motihari, Bihar, IFFCO, Patna, Bihar, A. K. Stationers, Motihari, Bihar for their generous sponsorship and financial support for this seminar. Furthermore, we extend our heartfelt appreciation to the Krishi Vigyan Kendra, Piprakothi, ICAR National Research Centre on Litchi (NRCL), Muzaffarpur Bihar ICAR National Research Centre for Makhana Darbhanga Bihar, ICAR Indian Institute of Farming Systems Research (IIFSR), Modipuram Uttar Pradesh, ICAR National Institute of Secondary Agriculture, Ranchi ICAR Central Institute of Fisheries Education Motipur Bihar for their assistance in the successful execution of this seminar. Lastly, the organizers sincerely appreciate the dedicated efforts of the staff at ICAR-MGIFRI, Piprakothi, Motihari, Bihar, and all supporting

personnel, whose commitment and hard work were crucial in organizing this national seminar.

Viksit Krishi Sankalp Abhiyan (VKSA) - 2025

Under the visionary leadership of the Honorable Union Minister of Agriculture, Shri Shivraj Singh Chouhan ji, the Viksit Krishi Sankalp Abhiyan (VKSA) - 2025 was officially launched on 29th May 2025 from the sacred land of Puri, Odisha. ICAR and the Ministry of Agriculture and Farmers' Welfare, in collaboration with state governments, are fully engaged in planning and executing this massive initiative across the country. This nationwide initiative aims to foster direct engagement with farmers to enhance awareness of various agricultural schemes introduced by both the Central and State Governments. Additionally, the campaign seeks to collect grassroots-level feedback to guide future agricultural research, with a special focus on location-specific needs and the effective dissemination of ICAR-developed technologies.

Objectives of the VKSA 2025

- Establishing effective dialogue with farmers for scheme awareness.
- Promoting location-specific agricultural practices and innovations.
- Gathering feedback for improved research and extension strategies.
- Enhancing the adoption of scientific, eco-friendly, and sustainable farming methods.

Efforts from ICAR-MGIFRI, Motihari

The institute played an active role in the Sankalp Abhiyan. Under the chairmanship of Dr. S.K. Purbey, Director, ICAR-MGIFRI; Dr. Shailesh Kumar Singh and Dr. P.K. Bharti were appointed as Nodal Officers to ensure the successful conduct of the event. The institute constituted 6 teams of scientists and technical staff, who were attached to KVKs of RPCAU, Pusa, Samastipur, for village visits. Details of the activities are given in the table below.

VKSA organizing teams	Team leader/ coordinator	Team No	KVK attached with
Chairman Dr. S.K. Purbey	Dr. S.K. Singh	1	Head and SMS from KVK Piprakothi
Nodal Officers Dr. Shailesh Kumar Singh Dr. P.K. Bharti	Mr. Rakesh N	2	Head and SMS from KVK Piprakothi
	Dr. Ravi Kumar	3	Head and SMS from KVK Parsauni
	Dr. N.M. Patnaik	4	Head and SMS from KVK Parsauni
	Dr. S. Nivesh and Dr. Jadhav Amol Kailas	5	Head and SMS from KVK Sheohar
	Dr. Koushik Banerjee and Dr. Geeta	6	Head and SMS from KVK Sheohar

Farmers innovations identified

- Selection of suitable potato varieties through on-farm demonstrations.
- Branding and value addition of turmeric, chili, and milk products.
- Introduction of capsicum cultivation under protected conditions.
- Production and branding of modified vermicomposting technology at large scale

Farmers' Expectations from Research Institutes

- Development of site-specific agricultural production practices for enhanced productivity.
- Introduction of digital decision support tools for real-time advisories.
- Timely availability of quality seed and planting materials.
- Establishment of site-specific Integrated Farming System (IFS) models.
- Introduction of waterlogging-resistant crop varieties.
- Design of raised-bed or ridge-furrow planting systems suitable for waterlogged areas.
- Promotion of zero-tillage and climate-resilient conservation agriculture technologies.
- Design of location-specific, low-cost post-harvest infrastructure.
- Need-based capacity building programs at the village/block level.

- Practical solutions for crop residue management.
- Dissemination of Oestrus detection kits for buffaloes and cattle.

Policy issues identified

- Promotion of farm mechanization through the establishment of Custom Hiring Centers (CHCs) at the village/block level.
- Strengthening collaboration among State Agriculture Departments, KVKs, ICAR institutes, agricultural universities, and ATMA for effective convergence and outreach.
- Support for infrastructure development in fish cultivation, especially in waterlogged and lowland areas.
- Strengthening market linkages by promoting Farmer Producer Organizations (FPOs) and cooperatives.
- Promote raised-bed systems and waterlogging-resistant crop varieties through policy for sustainable farming in waterlogged areas.
- Enhancing market access for livestock and poultry products through value chain development and organized marketing platforms.
- Addressing the lack of infrastructure for post-harvest handling and value addition, particularly for perishable and high-value crops.

Messages delivered to the farmer by teams: e.g. PoP, Agro-advisories, Government Schemes, Agri-drone demonstrations, literature distribution, feedback collection, diagnostics, etc.

- Soil Health Card and its importance in soil fertility
- Preparation of Vermicomposting
- Improving soil health through natural farming
- Integrated Farming System
- High-yielding varieties
- Resource conservation technologies
- Animal/Poultry/Fisheries management
- Central Government schemes, Importance of Government Schemes and how farmers can take advantage of the government schemes.
- The line department was actively involved in promoting government schemes.

- The feedback of farmers was noted and reported through Google Forms. Videos of the progressive farmers were also recorded

Conclusion

The execution of VKSA 2025 in East Champaran & Sheohar represented a pivotal achievement in promoting farmer-focused and research-driven agricultural advancement. The campaign facilitated significant interaction between scientific institutions and the agricultural community, allowing for the efficient distribution of essential technologies and optimal practices. It established a robust foundation for demand-driven research and need-based extension strategies that correspond with the distinct agro-climatic conditions and challenges of East Champaran. VKSA 2025 has facilitated the connection between research and practical applications, thereby enhancing the road map towards sustainable, inclusive, and resilient agricultural development in the state.

ICAR-MGIFRI IN VKSA

6 teams | Village covered: 252 | Farmers benefitted: 35980



VKSA 2025: Scientists from ICAR-MGIFRI interacted with farmers of different villages of East Champarana and Sheohar districts

NEWS REPORT COVERAGE DURING VKSA PROGRAM- 2025

बॉर्डर न्यूज़ मिरर (13.06.2025)

विकसित कृषि संकल्प अभियान के समापन पर उमड़ी किसानों की भीड़

बैलापुर, मोतीहारी

विकसित कृषि संकल्प अभियान के समापन के अवसर पर अभियान के महत्व को किसानों के बीच सझा करने के लिए कृषि विज्ञान केंद्र, परसौनी की टीम-2 ने रामगढ़ प्रखंड के तीन गांवों, पारसनी, अहिलिया और मंगलपुर पट्टी का दौरा किया और किसानों को कृषि में नवीनतम तकनीकों और भात साकर द्वारा फलदायी जा रही पी.एम. किसान सम्मान धन कृषि योजना, पी.एम. कृषि सिंचाई योजना, राष्ट्रीय कृषि बाजार, किसान क्रेडिट कार्ड, राष्ट्रीय खाद सुरक्षा मिशन, कृषि अवसराना कोष एवं अन्य लाभकारी योजनाओं से अवगत कराया। इस अभियान में कृषि विज्ञान केंद्र, परसौनी के मृदा विभाग डॉ. आशीष राय ने बताया कि मृदा स्वास्थ्य को किसानों से अच्छी उपज प्राप्त करने के लिए मिट्टी को जंच खूब हो जरूरी है। उन्होंने ही खाद के प्रयोग और उसके लाभों को बताया और कहा कि रासायनिक उर्वरकों एवं अन्य कृषि रसायनों



के दुष्प्रभाव से हमारी कृषि पारिस्थितिकी तंत्र, जल स्रोतों पर प्रतिकूल प्रभाव पड़ रहा है। इस दिशा में प्राकृतिक खेती के तरीकों को अपनाकर इन समस्याओं से निजात मिल सकती है। इससे खेती में न्यूनतम लागत से अधिकतम उत्पादन प्राप्त की जा सकती है। उन्होंने यह भी बताया कि इससे रोजगार सृजन की भी संभावना है। उन्होंने

की दृष्टि से लेकर लैंड लेवलर द्वारा भूमि समतलीकरण करने की सलाह दी और खरीफ खेत में लगने वाली मुख्य फसलों के लिए उपयुक्त कृषि यंत्र जैसे जेरी ट्रैलर सह फर्टी सोड ड्रिल, रास क्रीट खींच, डम साइड, रेज्ड बेड प्लॉटर, मल्टीक्रॉप प्लॉटर, डिफेंसर, खींच बीडर, जे, ड्रम, पीपर कम साइड और के बॉर में किसानों से बताया। इसके साथ ही फसलों में उचित जल प्रबंधन के लिए सिंचाई करने के सही समय एवं सूख सिंचाई प्रणाली के बारे में जानकारी दी। उन्होंने जल संयोजन करने की विधियों को बताया हुए इसको अपनाते की सलाह दी। मालवा गांधी समेकित कृषि अनुसंधान संस्थान, पिराकोटी के मुख्य वैज्ञानिक डॉ. उषा कुमार ने मालवा गांधी तालाब निर्माण और पानी की गुणवत्ता, मछली की अच्छी प्रवृत्तियों जैसे कलहा, रोह, मैनी, ब्रास कार्प, सिल्वर कार्प, कलन कार्प, पंगस के बारे में जानकारी दी और मछली पालन में कम लागत के सेंटिंग आहार जैसे रास दास और सरसों की खली, फिनलर मिसमर के

बारे में भी बताया। इसके साथ ही समेकित मछली पालन और हेचरी में मछली स्तन बनाने के लिए उपयुक्त उपकरणों के बारे में विस्तृत जानकारी दी। उन्होंने सरसों की फसल प्रवृत्तियों को बताया और फसलों में रोगों के प्रभाव को कम करने की सलाह दी। उन्होंने दीनदाल उपभोग्य उपकरणों के बारे में जानकारी दी। उन्होंने किसानों के वैज्ञानिक डॉ. संजय कुमार ने किसानों को उन्नत बीज के चयन के बारे में बताया हुए फसलों में रोगों के प्रभाव को कम करने की सलाह दी। उन्होंने किसानों को स्वस्थानिक के दृष्टिकोण से मधुमक्खी पालन और मधुमक्खी उत्पादन के बारे में किसानों को बताया। इस अभियान में प्रखंड स्तर के कृषि विभाग के किसान सलाहकार, कृषि समन्वयक, ए. टी. एम., बी. टी. एम. और बड़ी संख्या में किसानों के सहभागी रहे।

दैनिक भास्कर

मोतीहारी 30-05-2025

कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

मालवा गांधी

कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी। इस अभियान में कृषि विज्ञान केंद्र, परसौनी के मृदा विभाग डॉ. आशीष राय ने बताया कि मृदा स्वास्थ्य को किसानों से अच्छी उपज प्राप्त करने के लिए मिट्टी को जंच खूब हो जरूरी है। उन्होंने ही खाद के प्रयोग और उसके लाभों को बताया और कहा कि रासायनिक उर्वरकों एवं अन्य कृषि रसायनों



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

मोतीहारी 11-06-2025

कार्यक्रम - आम, लीची, सखी, मलया व जामुन में लगने वाले कीट-खर्राहियों के प्रबंधन भी बताए किसानों को प्रधानमंत्री किसान सम्मान समेत अन्य योजनाओं की दी जानकारी

कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी। इस अभियान में कृषि विज्ञान केंद्र, परसौनी के मृदा विभाग डॉ. आशीष राय ने बताया कि मृदा स्वास्थ्य को किसानों से अच्छी उपज प्राप्त करने के लिए मिट्टी को जंच खूब हो जरूरी है। उन्होंने ही खाद के प्रयोग और उसके लाभों को बताया और कहा कि रासायनिक उर्वरकों एवं अन्य कृषि रसायनों



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

सीतामढ़ी 11-06-2025

किसान चौपाल में उन्नत व जैविक खेती को लेकर किसानों को किया जागरूक



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

सीतामढ़ी 08-06-2025

कार्यक्रम - डुमरी कटसरी के करिया बाजार में किसान चौपाल का हुआ आयोजन नई तकनीक व उन्नत प्रभेद से कम जमीन में, कम खर्च पर अधिक उत्पादन पाया जा सकता है: रूपेश



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

वैज्ञानिकों ने किसानों को कृषि की आधुनिकतम तकनीक बतायी



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

विकसित कृषि संकल्प अभियान के तहत कृषि वैज्ञानिकों ने दी नई कृषि तकनीक की जानकारी



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

वैज्ञानिक तरीके से खेती के लिए किया प्रेरित

जामुन, शिवहर: विकसित कृषि संकल्प अभियान' के तहत शनिवार को जिले की डुमरी कटसरी प्रखंड के गाजीपुर, करिया व लालगढ़ तथा तरियानी प्रखंड के चक सुरगाही, सुरगाही व सलेमपुर गांव में गोष्ठी का आयोजन कर किसानों को वैज्ञानिक तरीके से प्राकृतिक खेती की जानकारी दी गई। कृषि विज्ञान केंद्र शिवहर के वैज्ञानिक सोरभ शंकर पटेल ने मोटे अनाज के पोषण संबंधी लाभ की जानकारी दी। इसकी खेती के लिए किसानों को प्रेरित किया। समेकित कृषि अनुसंधान केंद्र पिराकोटी के वैज्ञानिक डा. जाधव अमोल कैलाश ने किसानों को बागवानी, मधुमक्खी पालन, मशरूम उत्पादन, कीट प्रबंधन फसल अवशेष प्रबंधन, खर पतवार प्रबंधन और विभिन्न कृषि योजनाओं से मिलने वाली अनुदान की जानकारी दी। मौके पर कृषि प्रधान समन्वयक डा. अनुराधा रंजन भी मौजूद थीं।

हिन्दुस्तान फसल की बुआई से पहले मिट्टी जांच करने पर जोर



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

मोतीहारी 09-06-2025



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

29 मई से 12 जून तक चलेगा अभियान

पहाड़पुर: कृषि उत्पादकता को बढ़ाने व किसानों की आय दोगुनी करने के लिए केंद्रीय कृषि एवं किसान कल्याण मंत्रालय द्वारा विकसित कृषि संकल्प नामक महाकाव्यी अभियान की शुरुआत की गई है। (केंद्रीय परसौनी के कृषि वैज्ञानिक अंशु रंगवार ने बताया कि यह अभियान पूरे देश में 29 मई से 12 जून 2025 तक चलेगा। इस अभियान के अंतर्गत कृषि विज्ञान केंद्र परसौनी व पिराकोटी द्वारा चार टीमों का गठन किया गया है। जिसमें आईसीएसएआर - महात्मा गांधी समेकित कृषि अनुसंधान संस्थान, पिराकोटी के वैज्ञानिक होंगे।

किसानों को दी उन्नत खेती की जानकारी



कृषि विज्ञान केंद्र परसौनी की टीम-2 की ओर से किया गया आयोजित विकसित कृषि संकल्प अभियान की शुरुआत, किसानों को दी गई जानकारी

मोतीहारी 06-06-2025

मोतीहारी 09-06-2025

29 मई से 12 जून तक चलेगा अभियान

किसानों को दी उन्नत खेती की जानकारी

Various Events organized at ICAR- MGIFRI, 2025



Celebrated 76th Republic Day at the Institute on 26 January 2025



20th installment of the PM-KISAN scheme was released on 2 August, 2025



Exposure visits for farmers from KVK Madhopur on IFS, conducted at ICAR-MGIFRI on 7 January, 2025



Bucket distribution to SC farmers of east Champaran district was conducted on 2 August, 2025



ICAR-MGIFRI celebrated International Day of Yoga on 21 June 2025



Celebration of 79th Independence Day at the Institute on 15 August 2025



ICAR-MGIFRI observed Swachhata event at tourist spot during 1-15 September 2025



Parthenium Eradication event was conducted on 16 August 2025



Rashtriya Ekta Diwas Program conducted at ICAR-MGIFRI, Motihari on 31.10.2025



ICAR-MGIFRI observed Special campaign 5.0



Swachhata activity conducted at Rajkiya buniyadi vidyaya, Piprakothi on 15 October 2025



ICAR-MGIFRI organized Hindi diwas and Hindi pakhwada during 01-15 September 2025



ICAR-MGIFRI commemorated 150 years of the national song Vande Mataram on 7 November, 2025



ICAR-MGIFRI observed Vigilance awareness week from 27.10.25 to 2.11.2025



ICAR-MGIFRI celebrated Janjatiya Gaurav Divas on 15 November 2025 to commemorate the birth anniversary of the tribal freedom fighter and anti-colonialist Birsa Munda



Release of 21st Installment of PM- KISAN Samman Nidhi and Farmers-Scientists Interaction Program on 19 November 2025



ICAR-MGIFRI observed constitution day at the institute on 26 November 2025



World soil day was conducted by ICAR-MGIFRI on 5 December 2025



Kisan day was conducted with the farmers on 23 December 2025 at village Ujhilpur by the team of scientist of the institute

राजभाषा हिंदी चेतना पखवाड़ा 1-16 सितम्बर 2025

राजभाषा हिंदी के प्रचार प्रसार एवं कार्यालयीन कार्यों में हिंदी के अधिकाधिक प्रयोग को प्रोत्साहित करने के उद्देश्य से भा.कृ.अनु.प. महात्मा गाँधी समेकित कृषि अनुसंधान संस्थान, पीपराकोठी, मोतिहारी में दिनांक 01 सितम्बर 2025 से 16 सितम्बर 2025 तक हिंदी पखवाड़ा का सफलतापूर्वक आयोजन किया गया। हिंदी पखवाड़ा आयोजन समिति की बैठक दिनांक 03.09.2025 को प्रातः 10:15 बजे बैठक कक्ष में समिति के अध्यक्ष एवं सदस्यों की उपस्थिति में आयोजित की गई, जिसमें विभिन्न प्रतियोगिताओं, पुरस्कारों एवं कार्यक्रमों के आयोजन पर विस्तृत विचार विमर्श कर आवश्यक संस्तुतियाँ प्रदान की गईं। समिति द्वारा हिंदी क्षेत्र के प्रतिभागियों हेतु हिंदी टिप्पण एवं प्रारूप लेखन, निबंध, वाद विवाद, आशुभाषण एवं काव्य पाठ सहित कुल 05 प्रतियोगिताओं तथा हिंदीतर क्षेत्र के प्रतिभागियों हेतु निबंध, आशुभाषण एवं काव्य पाठ सहित कुल 03 प्रतियोगिताओं के आयोजन पर सहमति प्रदान की गई। साथ ही यह निर्णय लिया गया कि विजेताओं को नगद राशि के स्थान पर उपहार सामग्री प्रदान की जाएगी तथा हिंदी भाषा में उत्कृष्ट कार्यालयी कार्य करने वाले कार्मिकों को आगामी वर्ष सम्मानित किया जाएगा।

हिंदी पखवाड़ा के सफल आयोजन हेतु संस्थान में विस्तृत कार्यक्रम तैयार किया गया तथा निदेशक महोदय के निर्देशानुसार संस्थान में अधिकाधिक कार्य हिंदी भाषा में किए जाने के संबंध में परिपत्र जारी किया गया। कार्यक्रमों में संस्थान के वैज्ञानिक, प्रशासनिक, तकनीकी, युवा पेशेवर एवं संविदा कर्मियों ने उत्साहपूर्वक सहभागिता की। हिंदी पखवाड़ा के अंतर्गत उद्घाटन सत्र, हिंदी निबंध प्रतियोगिता, वाद विवाद प्रतियोगिता, आशुभाषण प्रतियोगिता, हिंदी काव्य पाठ प्रतियोगिता तथा हिंदी टिप्पण एवं प्रारूप लेखन प्रतियोगिता का आयोजन विभिन्न तिथियों पर सफलतापूर्वक किया गया। सभी प्रतियोगिताओं के संचालन हेतु पृथक समितियों का गठन किया गया तथा संबंधित वैज्ञानिकों एवं अधिकारियों द्वारा कार्यक्रमों का सफल संचालन किया गया।

दिनांक 14 सितम्बर 2025 को हिंदी दिवस के अवसर पर "हिंदी संस्कृति एवं विज्ञान की धरोहर" विषय पर एक दिवसीय कार्यशाला का आयोजन संस्थान के सेमिनार हॉल में किया गया। कार्यक्रम का संचालन डा. अमोल कैलाश जाधव, वैज्ञानिक द्वारा किया गया।

कार्यक्रम का शुभारंभ अतिथियों द्वारा दीप प्रज्वलन एवं भाकृअनुप गीत के साथ हुआ। मुख्य अतिथि के रूप में डा. सुष्मिता सिंह, प्राचार्य, नवोदय विद्यालय, पिपरा कोठी, मोतिहारी उपस्थित रहीं। निदेशक महोदय द्वारा मुख्य अतिथि का स्वागत किया गया। तत्पश्चात डॉ. एस. के. सिंह, प्रधान वैज्ञानिक एवं अध्यक्ष, हिंदी पखवाड़ा आयोजन समिति द्वारा स्वागत भाषण एवं हिंदी दिवस आयोजन की रूपरेखा प्रस्तुत की गई। कार्यक्रम के दौरान समस्त अधिकारियों एवं कर्मचारियों द्वारा राजभाषा प्रतिज्ञा ली गई। विभिन्न वैज्ञानिकों एवं अधिकारियों द्वारा हिंदी के महत्व पर अपने विचार व्यक्त किए गए। निदेशक महोदय ने अपने उद्बोधन में कार्यालयीन कार्यों में हिंदी के प्रयोग को बढ़ावा देने पर बल दिया। मुख्य अतिथि द्वारा “राजभाषा के रूप में हिंदी का विकास, महत्व तथा राष्ट्र निर्माण में योगदान” विषय पर व्याख्यान प्रस्तुत किया गया, जिसे प्रतिभागियों द्वारा अत्यंत सराहा गया। अंत में डा. रवि कुमार, वैज्ञानिक द्वारा धन्यवाद ज्ञापन प्रस्तुत किया गया।

हिंदी पखवाड़ा का समापन एवं पुरस्कार वितरण समारोह दिनांक 16 सितम्बर 2025 को आयोजित किया गया। कार्यक्रम का संचालन डा. श्रेया निवेश, वैज्ञानिक द्वारा किया गया। कार्यक्रम में मुख्य अतिथि के रूप में डा. आर. के. झा, अधिष्ठाता, उद्यान एवं वानिकी महाविद्यालय, डा. राजेन्द्र प्रसाद केंद्रीय कृषि विश्वविद्यालय, पीपराकोठी तथा विशिष्ट अतिथि के रूप में डा. गरिमा तिवारी, हिंदी विभाग, महात्मा गांधी केंद्रीय विश्वविद्यालय, मोतिहारी उपस्थित रहीं। कार्यक्रम के दौरान विभिन्न प्रतियोगिताओं के विजेताओं को उपहार सामग्री एवं प्रमाण पत्र प्रदान कर सम्मानित किया गया। मुख्य एवं विशिष्ट अतिथियों ने हिंदी भाषा के महत्व तथा वैज्ञानिक एवं प्रशासनिक कार्यों में हिंदी के प्रयोग पर अपने विचार व्यक्त किए। निदेशक महोदय ने समस्त प्रतिभागियों एवं आयोजन समिति की सराहना करते हुए हिंदी भाषा के संवर्धन हेतु निरंतर प्रयास करने का आह्वान किया। कार्यक्रम के अंत में डा. रवि कुमार, वैज्ञानिक द्वारा धन्यवाद ज्ञापन प्रस्तुत किया गया तथा राष्ट्रगान के साथ कार्यक्रम का समापन हुआ।



राजभाषा हिंदी चेतना पखवाड़ा 1-16 सितम्बर 2025

सम्पूर्ण हिंदी पखवाड़ा कार्यक्रम अत्यंत सफल एवं प्रभावी रहा। कार्यक्रमों के माध्यम से संस्थान के अधिकारियों एवं कर्मचारियों में हिंदी भाषा के प्रयोग के प्रति जागरूकता एवं उत्साह में वृद्धि हुई। प्रतियोगिताओं एवं कार्यशाला में प्रतिभागियों की सक्रिय सहभागिता से यह स्पष्ट हुआ कि संस्थान में राजभाषा हिंदी के प्रति सकारात्मक वातावरण विकसित हो रहा है। आयोजन समिति के सभी सदस्यों, वैज्ञानिकों, अधिकारियों एवं कर्मचारियों के सहयोग से कार्यक्रम सुव्यवस्थित एवं सफलतापूर्वक संपन्न हुआ।

मूल्यांकन समिति द्वारा प्रतियोगिताओं का मूल्यांकन कर परिणाम प्रस्तुत किया गया, जिसके अनुसार विभिन्न प्रतियोगिताओं हेतु पुरस्कारों का विवरण निम्नानुसार किया गया

विषय	हिंदी	हिंदीतर
हिंदी निबंध	05 पुरस्कार	05 पुरस्कार
वाद-विवाद	06 पुरस्कार	—
आशु-भाषण	05 पुरस्कार	04 पुरस्कार
काव्य पाठ	06 पुरस्कार	04 पुरस्कार
हिंदी टिप्पण एवं प्रारूप लेखन	05 पुरस्कार	
कुल योग	27 पुरस्कार	13 पुरस्कार

इस प्रकार हिंदी पखवाड़ा कार्यक्रम संस्थान में राजभाषा हिंदी के प्रचार प्रसार, कार्यालयीन कार्यों में हिंदी के प्रयोग तथा कर्मचारियों में भाषाई जागरूकता विकसित करने की दिशा में अत्यंत उपयोगी एवं प्रेरणादायक सिद्ध हुआ।

Janjatiya Gaurav Varsh Pakhwada-2025 (1-15 November, 2025)

ICAR-Mahatma Gandhi Integrated Farming Research Institute (ICAR-MGIFRI), Motihari actively observed Janjatiya Gaurav Varsh Pakhwada during 1-15 November, 2025 in commemoration of the 150th birth anniversary of Bhagwan Birsa Munda. The programme was

organized with the objective of celebrating India's rich tribal heritage while promoting awareness, sustainable livelihood development, and socio-economic empowerment among tribal communities.

A series of outreach programmes, awareness campaigns, farmer interactions, exhibitions, and institutional activities were conducted during the Pakhwada period. The initiatives focused on strengthening livelihood opportunities, enhancing awareness regarding government welfare schemes, promoting sustainable agriculture, and recognizing the contribution of tribal communities toward environmental conservation and indigenous knowledge systems.



Major Activities Conducted

During the Pakhwada, ICAR-MGIFRI organized and participated in several activities related to tribal welfare and development. Awareness programmes and field interactions were conducted among tribal communities to

understand their socio-economic conditions and livelihood systems. Discussions were held on livelihood diversification, sustainable agriculture, livestock management, financial inclusion, and government development schemes. Special emphasis was given to motivating rural youth and women toward income-generating activities and self-reliance.

The institute also participated in regional farmers' conclaves and exhibitions focusing on tribal livelihood development and sustainability. Scientists interacted with tribal farmers and stakeholders on issues related to climate-resilient agriculture, improved crop production, horticulture, livestock management, and integrated farming systems. The programmes provided an important platform for exchange of ideas and dissemination of technologies suitable for tribal and hill farming systems. At the institutional level, awareness programmes were organized to commemorate the life and contribution of Bhagwan Birsa Munda. Lectures and discussions highlighted the importance of tribal heritage, indigenous technical knowledge, conservation of natural resources, and the role of tribal communities in sustainable development. Staff members actively participated in the celebrations and expressed commitment toward promoting inclusive growth and tribal empowerment.





Glimpses of the event conducted in tribal village of East Champaran, Bihar

Key Focus Areas

The activities conducted during the Pakhwada primarily focused on:

- Tribal livelihood development and sustainability
- Awareness regarding government welfare schemes
- Promotion of integrated and climate-resilient farming systems
- Livestock and crop management practices
- Financial inclusion and entrepreneurship development
- Preservation of Indigenous Technical Knowledge (ITKs)
- Conservation of native seeds and natural resources
- Tribal empowerment through education and awareness

Outcomes and Impact

The programmes conducted under Janjatiya Gaurav Varsh Pakhwada - 2025 helped strengthen interaction with tribal communities and enhanced awareness

regarding livelihood opportunities, sustainable farming practices, and government support mechanisms. The activities also provided valuable understanding of the socio-economic conditions and developmental needs of tribal households.

The institutional celebrations created awareness among staff regarding the historical significance of Bhagwan Birsa Munda and the importance of preserving tribal heritage, culture, and indigenous knowledge systems. The initiatives further reinforced the institute's commitment toward sustainable rural development and inclusive growth for tribal communities.

The observance of Janjatiya Gaurav Varsh Pakhwada - 2025 by ICAR-MGIFRI, Motihari successfully highlighted the importance of tribal welfare, sustainable livelihoods, and preservation of indigenous traditions. Through awareness programmes, farmer interactions, exhibitions, and institutional activities, the institute contributed toward promoting tribal empowerment and strengthening the vision of inclusive and sustainable development. The programmes also reaffirmed the institute's dedication to supporting tribal communities through research, extension, capacity building, and dissemination of appropriate technologies for improved livelihoods and resilience.

Distinguished visitors during 2025



Dr. Inderjeet Singh, hon'ble Vice-Chancellor, BASU, Patna visited the institute as chief guest on the eve of 1st National seminar conducted at the institute during 4-5 March 2025



Shri Sudhakar Singh, Member of Parliament, Buxar, Bihar visited the institute and interacted with the scientist on 2 June 2025



Dr. V.K. Singh, Director ICAR-CRIDA visited our institute on 2 May 2025 on the eve of participating NICRA meeting at KVK Piprakothi



Shri Ram Nath Thakur Hon'ble Minister of State of India in Ministry of Agriculture and Farmers Welfare visited the institute and interacted with the scientist on 16 July 2025



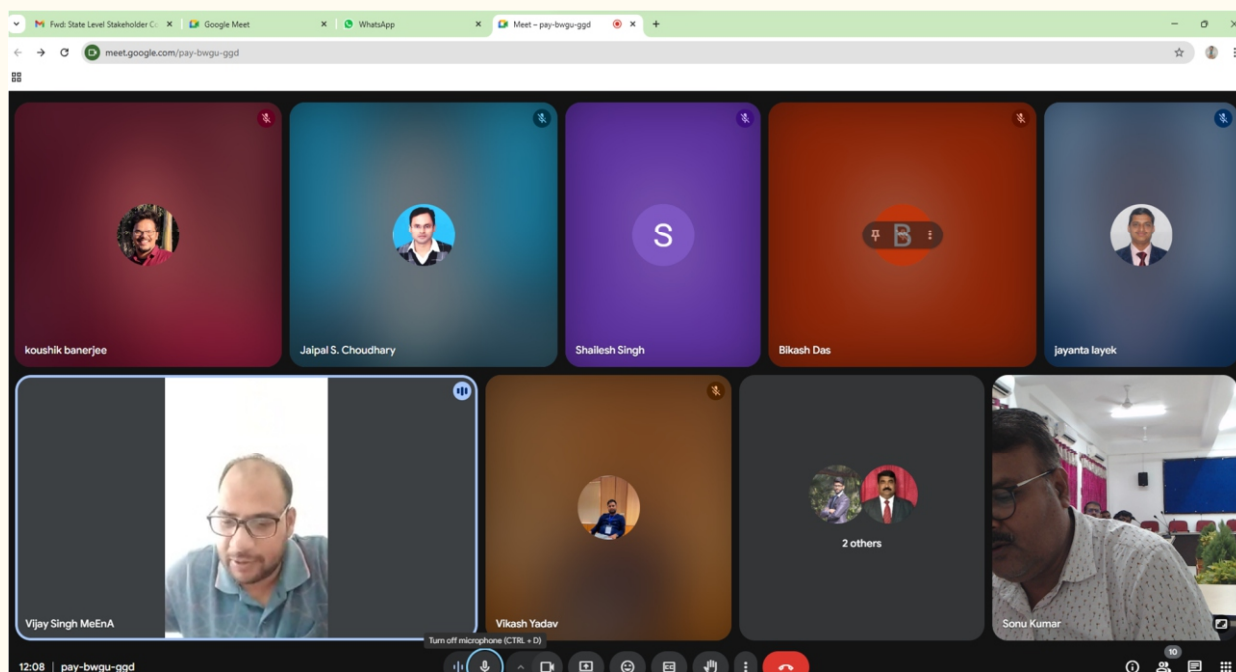
Dr. Rakesh Kumar, ADG (NRM)- ICAR (AAF&CC), New Delhi visited the institute on the eve of 3rd meeting of RAC during 20-21 November 2025



State Level Stakeholder Consultation Workshop on Transforming Food, Land, and Water (FLW) Systems to Combat the Climate Crisis

India faces mounting climate pressures: rising average temperatures (+0.7°C since 1901), declining monsoon reliability (~8% reduction in seasonal consistency), and an increase in extreme events—such as floods, droughts, and heatwaves (IPCC, 2023). These shifts are projected to reduce agricultural productivity by 20–30% by 2050, with pulses, vegetables, and fruits most affected (DST, 2016). In this context, addressing the climate crisis calls for a systems-based transformation—where food, land, and water management. A climate smart FLW framework promotes resource efficiency, ecological restoration, and inclusive growth. As a part of national initiative, ICAR-MGIFRI has been nominated as the Nodal Institute for conducting this important consultation in Jharkhand by the Department of Agricultural Research and Education (DARE), Govt. of India. Following the instruction from SMD, ICAR-MGIFRI conducted one State Level Stakeholder Consultation Workshop for the state Jharkhand on 16.08.2025. In this workshop deliberation/ discussions were made on the Sub-theme I: Climate-Smart Food & Nutrition Transformation, Sub-theme II: Watershed-Based Resilience & Integrated NRM and Sub-theme V: Frontier Technologies for Climate-Resilient FLW Systems under three consecutive sessions. The workshop was coordinated by Dr. S. K. Purbey, director, where different agricultural state representative of Jharkhand including Scientist, Line department, KVK person etc. were invited. Sub-theme I was chaired by Dr. Bikas Das, Director, ICAR-NRCL, Muzaffarpur along with the Co-Chair: Dr. S.K. Purbey, Director, ICAR-MGIFRI, Motihari, Bihar and Panellist viz; Dr. Jayant

Layek, Senior Sci, ICAR-IIAB, Ranchi, Dr. Jaipal Singh Choudhary, Senior Sci, ICAR-RCER, FSRCHPR, Ranchi, Dr. Vijya Singh Meena, Senior Sci. ICAR-MGIFRI, Motihari, Bihar, Dr. Koushik Banerjee, Sci. ICAR-MGIFRI, Motihari, Bihar. Dr. Anup Das, Director, ICAR-RCER, Patna chaired Sub-theme II along with Dr. P. K. Bharti, Senior Sci. ICAR-MGIFRI, Motihari, Bihar as co-chairman and Panellist viz; Dr. Anjani Kumar, Director ICAR-ATARI, Patna; Shri Vikas Kumar; Director, SAMETI, Ranchi, Jharkhand, Dr. S. K. Singh, Pr. Sci. ICAR-MGIFRI, Motihari, Bihar, Dr. Neela Madhav Patnaik, Sci. ICAR-MGIFRI, Motihari, Bihar. In Sub-theme V, Dr. Awani Singh, Head, ICAR-RCER, FSRCHPR, Ranchi was invited to chair the session along with him, Dr. S. K. Singh, Pr. Sci. ICAR-MGIFRI, Motihari, Bihar co-chaired the session with Panellist viz; Shri Vikas Kumar; Director, SAMETI, Ranchi, Jharkhand, Dr. Jaipal Singh Choudhary, Senior Sci, ICAR-RCER, FSRCHPR, Ranchi, Dr. P. K. Bharti, Senior Sci. ICAR-MGIFRI, Motihari, Bihar, Dr. Naveenkumar B. Patil, Senior Sci. ICAR-MGIFRI, Motihari, Bihar; Mr. Rakesh N, Sci. ICAR-MGIFRI, Motihari, Bihar. During each session emphasis was given on importance of climate-smart food-nutrition system transformation, current policy landscape, programmes, schemes and their progress on this aspect, key achievements, major policy, programmatic and capacity building gaps affecting the working of the state/uts administration, possible solutions in terms of proposed ideas, actions that can be undertaken by different stakeholders. scope for convergence with other schemes/programmes, best practices including international collaborations, capacity building and state initiatives; identified priority areas; and strategy for implementation. A details report covering these parameters was submitted to the SMD for further course of action.



Virtual State Level Stakeholder Consultation Workshop for the state Jharkhand on Transforming Food, Land, and Water (FLW) Systems to Combat the Climate Crisis

Swachha Bharat Abhiyan

The Director and staff of ICAR-MGIFRI, Motihari actively participated in the Swachh Bharat Abhiyan, sanitation drives, and Swachhata awareness programs throughout the year 2025. A total of 25 Swachhata awareness programs were conducted at both within the institute and village levels to sensitize the local community about the importance of cleanliness. The institute observed Swachhata Hi Seva Campaign 2025 under the theme: 'Swachhotsav' during 15th September-2nd October 2025 and celebrated Swachh Bharat Diwas celebration on 2nd October 2025. On the occasion of Mahatma Gandhi and Lal Bahadur Shastri's birth anniversary on 2nd October 2025, the Director administered the Swachhata pledge to 78 staff members of the institute, emphasizing the role of cleanliness in nation-building. During this Swachhata Pakhwada, a series of impactful activities were undertaken. Twenty-five basic maintenance events were carried out, engaging 82 staff and farmers. Cleaning and beautification efforts included 45 events with 24 participants. Three events were focused on composting, vermicomposting, and residue

management activities, involving 32 participants to demonstrate how farm waste can be converted into valuable resources. Daily sanitization of the ICAR-MGIFRI campus was maintained with the involvement of 25 staff members. In addition to these, innovative events were conducted to foster community involvement and environmental consciousness. Notable among them were 'Parthenium Awareness and Eradication week', paired with beautification initiatives to promote green spaces. Social media campaigns were launched to extend the reach of cleanliness messages. Swachhata Runs were organized to integrate fitness with cleanliness awareness. Through Swachhata Samvad, dialogues and discussions were held to encourage public participation and behavioral change. Creative selfie points were established in villages, showcasing waste transformed into art. A symbolic human chain event demonstrated collective commitment to sanitation and cleanliness. Furthermore, cleaning activities at tourist spots, religious & spiritual places and sanitation workers in the creation of products using upcycled materials, championing the principles of Reduce, Reuse, and Recycle. Swachhata pledge was taken in offices, Selfie Points installed at Strategic Locations of the institute. Following the directive of the Director General-ICAR and Secretary-DARE, and under the leadership of the institute's director, a special cleanliness

campaign for the eradication of *Parthenium hysterophorus* (carrot grass) was carried out during Parthenium Awareness Week (August 16-22, 2025), engaging approximately 25 individuals including scientists, Young Professionals (YPs), and contractual staff. Around 960 square meters of the campus were cleared during the initiative. Under the guidance of the Director, ICAR-MGIFRI also observed Kisan Diwas on 23.12.2025. On this occasion, a village level interaction meet between farmer- scientist along with swachhata activity was conducted at village

Ujhilpur, East Champaran. Dr. S.K. Purbey, Director of the Institute, administered the Swachhata Shapath to the participating farmers and staff, and honored several farmers for their contributions. He delivered a talk on green technologies and waste-to-wealth practices, encouraging sustainable farming. Dr. Koushik Banerjee, Nodal Officer of the Swachhata Abhiyan, shared insights on the activities carried out during Swachhata Pakhwada, reinforcing the institute's ongoing commitment to cleanliness and environmental stewardship.

A brief account on Swachha Bharat Abhiyan at ICAR-MGIFRI, Motihari in the year 2025

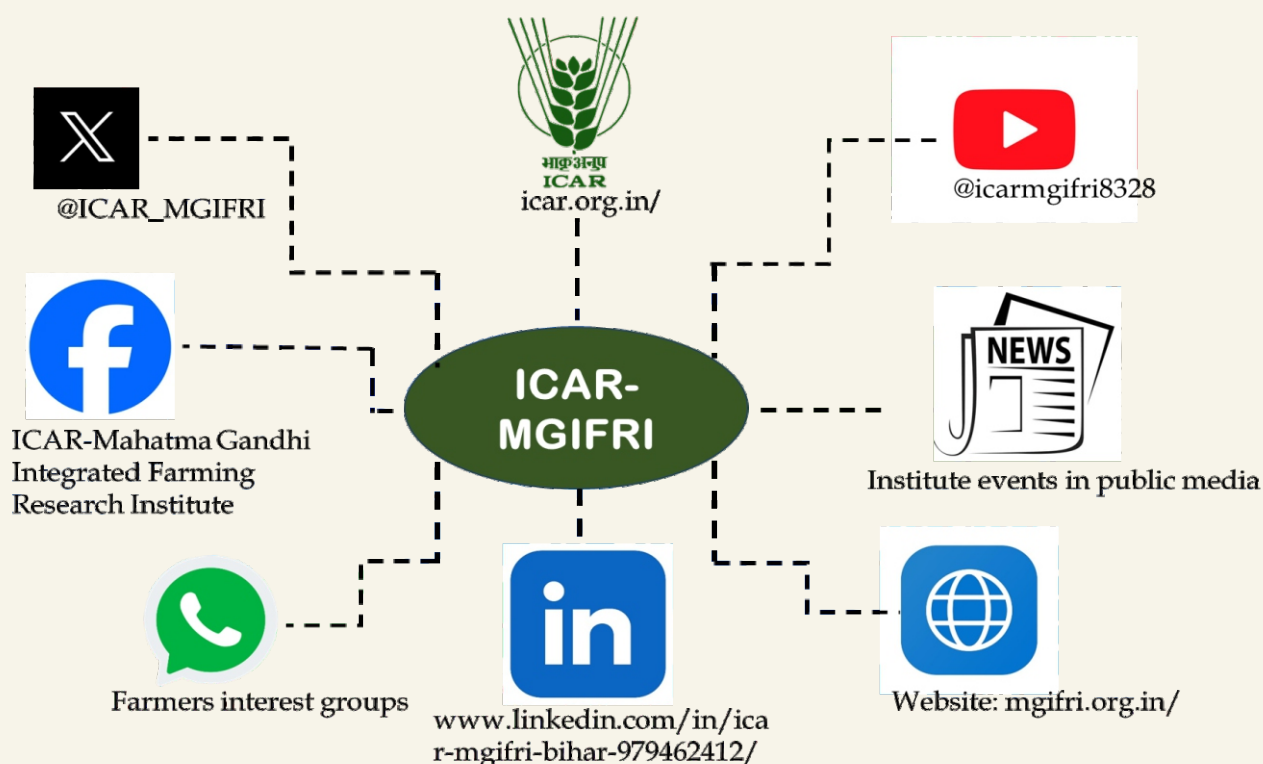
Sl. N.	Nature of event	No. of event	No. of staff/farmer participated
1	Basic maintenance	25	82
2	Cleaning and beautification of the surrounding area	45	24
3	Composting/vermicomposting/residue management and other activities on generation of wealth from waste	03	32
4	Swachhata awareness at local level	25	86
5	Involvement of print and electronic media	06	-
6	No. of VIP/VVIPs involved in the activities	02	12
7	Sanitization of office and campus of ICAR-MGIFRI	Daily	25
8	Swachhata pledge	02	78





Few photographs of the event

ICAR-MGIFRI IN MEDIA



NEWSPAPER REPORTS OF ICAR-MGIFRI

Ministry of Agriculture & Farmers Welfare

Workshop on "Technology and Knowledge Sharing under NEH Component" organised at ICAR-RCER, Patna

प्रारंभिक तिथि: 23 SEP 2025 11:28AM by PIB Patna

A two-day "Technology and Knowledge Sharing Workshop under the NEH Component" commenced at the ICAR Research Complex for Eastern Region, Patna on September 22, 2025, jointly organized by ICAR-RCER, Patna, and ICAR-MGIFRI, Moharajpur.

The programme was honored by the esteemed presence of the Chief Guest, Dr. Anupam Mishra, Honourable Vice-Chancellor, CAU Imphal, while Dr. Rakesh Kumar, ADG (IAF & CO), NRM, ICAR, New Delhi, joined the session virtually. The event was further enriched by distinguished dignitaries, including Dr. Anup Das, Director, ICAR-RCER, Patna; Dr. Anjan Kumar, Director, ICAR-ATARI, Patna; Dr. Bikash Das, Director, ICAR-NRC on Livestock, Dr. S.K. Puri, Director, ICAR-MGIFRI, Moharajpur; Dr. H. Kalita, HARC, ICAR RC for NEHR, Nagaland Centre; Dr. L.M. Garmayak, Director of Research, CAU Imphal; and Dr. R.K. Jaiswal, Sr. Cropping System Agronomist & In-Charge, BISA, Patna. Scientists and Heads from various ICAR Institutes across the NEH region also participated actively.

पर्यावरण अनुकूल खेती के लिए किसानों को प्रशिक्षण की आवश्यकता : कुलपति

दो दिवसीय राष्ट्रीय संगोष्ठी का आगाज

कने के लिए मनुष्यजन, दुग्ध उत्पादन, टमाटर, दलहन उत्पादन कर उसके प्रोसेसिंग की आवश्यकता है। इस प्रकार किसानों की आय बढ़ाई जा सकती है। यहां के लोग भाग्यशाली हैं कि यहां पर उन्मुख पशु प्रजनन केंद्र खुल रहा है। जिसके माध्यम से देशी गायों का विकास कर अधिक दुग्ध का उत्पादन लिया जा सकता है। नौकरी पर प्रोफेशनल एवं प्रमुख यूएसए, भारत, डॉ. एम.आर. नायक, एमजीआईएफआरआई के पूर्व निदेशक डॉ. के.जी. मंडल, निदेशक भारतीय पशुधन पति विभाग, डॉ.आरपीएमए, पूरुष डॉ. एके सिंह, केविके प्रभारी प्रमुख मनीष कुमार, गायत्री कुमारी आदि मौजूद थे।

कुलपति डॉ. सिंह का कि 2016-17 में प्रधानमंत्री ने किसानों को आय सुनिश्चित करने की बात कही थी। उसके लिए विभिन्न योजनाओं को लागू किया गया परंतु मौलिक आवश्यकताओं की मीटिंग नहीं हुई। अनुसंधान में कृषि उपकरणों की जरूरत बढ़ी। जिससे उनकी आय सुनिश्चित होने में मदद मिले। आय सुनिश्चित करने के लिए मनुष्यजन, दुग्ध उत्पादन, टमाटर, दलहन उत्पादन कर उसके प्रोसेसिंग की आवश्यकता है। इस प्रकार किसानों की आय बढ़ाई जा सकती है। यहां के लोग भाग्यशाली हैं कि यहां पर उन्मुख पशु प्रजनन केंद्र खुल रहा है। जिसके माध्यम से देशी गायों का विकास कर अधिक दुग्ध का उत्पादन लिया जा सकता है। नौकरी पर प्रोफेशनल एवं प्रमुख यूएसए, भारत, डॉ. एम.आर. नायक, एमजीआईएफआरआई के पूर्व निदेशक डॉ. के.जी. मंडल, निदेशक भारतीय पशुधन पति विभाग, डॉ.आरपीएमए, पूरुष डॉ. एके सिंह, केविके प्रभारी प्रमुख मनीष कुमार, गायत्री कुमारी आदि मौजूद थे।

बिहार

लोकल सत्ता

खरीफ फसलों की तैयारी के लिए सबसे उपयुक्त समय जून महिना

लोकल सत्ता/संवाददाता पूर्वी घाट (सोनीगढ़)। जून माह की खरीफ फसलों की तैयारी के लिए सबसे उपयुक्त समय जून माह है। इस माह में किसान खान की नर्सरी को तैयारी में जुटे हैं। ऐसे में किसान माई नर्सरी लगाने के पूर्व कुछ आवश्यक बातों का ध्यान अवश्य रखें। ताकि खान का बेहतर उपज उन्हें मिल सके। उक्त बातों विचारित कृषि संकाय अधिकांश के दौरान पूर्वी घाट के किसानों के पास में कृषि विभाग के वरिष्ठ विशेषज्ञ डॉ. अशोक राय ने किसानों को संबोधित करते हुए कहा कि खान की नर्सरी को तैयारी में जुटे हैं। नर्सरी क्षेत्र को पानी से भरकर होना चाहिए। खान पानी को पानी पर रखने से खान को एक दिन के लिए ऐसे ही छोड़ दें। खानों की तैयारी देखभाल के लिए 2-3 मीटर चौड़ाई तथा 8-10 मीटर लम्बाई रखनी चाहिए। विभिन्न किस्मों के लिए नर्सरी बनाने समय विभिन्न प्रजातियों की मिश्रण से बनने के लिए दो प्रजातियों के बीच नर्सरी बनाएँ। खान का फसल 1.5-2.0 मीटर होना चाहिए। मृदाजल रेत एवं कोटों के निर्माण हेतु टाइल कोटों अथवा क्लोरोप्लास्टिक का प्रयोग करना चाहिए, जिससे खान एवं मृदाजल रेतों से बचने का काम हो सके। साथ ही इससे खान का जमाव प्रशिक्षण भी बढ़ता है। खान का खान सफाईपूर्वक करें। इसके लिए आधारी एवं प्रभावी बीजों का ही प्रयोग करें। इसमें पूर्ण जल, प्रजातियों को शुद्ध एवं स्वस्थ होने को प्रभावित करनी है। सामान्यतः मेटे टर्न वाली किस्मों के लिए 30-35 कि.ग्र. एवं फलने वाले के लिए 20-25 कि.ग्र. प्रति हेक्टेयर बीज पर्याप्त होता है। एक हेक्टेयर रोवाई के लिए 500-700 ग्र. मीटर चौड़ा क्षेत्र पर्याप्त होता है। बीज डालने के बाद कट्टर एवं जलवायुमय रोगों के निरोध के लिए 20-25 कि.ग्र. प्रति हेक्टेयर बीज को कट्टरता और कोटताकर के पोल में दूधोकर 24 घण्टे के लिए पानी में भिरोकर रख दें तथा 24-36 घण्टे तक जमाव होने दें। बीच-बीच में पानी का छिड़काव करते रहें। इसके बाद पानी को लाली के साथ संयुक्त विधि बनाए रखने के लिए नर्सरी क्षेत्रों के ऊपर अक्षुण्ण बीजों को समान रूप से छिड़काव करें। जब तक नर्सरी हरी न हो जाए, पौधों से होने वाले नुकसान से बचाने के लिए विशेष सावधानी बरतें। पौधों के बचका के लिये नर्सरी में खेत को तैयारी के बाद पौधों का पिकर और जैविक खाद का प्रयोग करना करें जिससे पौधे स्वस्थ और मजबूत होंगे। नैनी डोरोपी से भी खेत को टोपेट कर सकते हैं। कार्यक्रम में डॉ. वैज्ञानिक डॉ. संजय कुमार, पूर्व अध्यापिका विशेषज्ञ डॉ. अंशु रंजना, महती वैज्ञानिक डॉ. रीति कुमार ने भी किसानों को अपने विषय को तकनीकी जानकारी दी।

पीएम किसान सम्मान निधि की 21वीं किस्त जारी

पीएम कोटी। प्रधानमंत्री नरेंद्र मोदी ने बुधवार को प्रधानमंत्री किसान सम्मान निधि की 21वीं किस्त के तहत देशभर के किसानों को 18 हजार करोड़ रुपये की सम्मान राशि हस्तांतरित की। इस कार्यक्रम का सीधा प्रसारण स्थानीय महात्मा गांधी समेतक .पि अनुसंधान संस्थान में दिखाया गया। इस कार्यक्रम के सभागार में बड़ी संख्या में किसानों ने इस कार्यक्रम को देखा। किसानों ने केंद्र सरकार को इस पहल की सराहना की, जिसके तहत उन्हें आर्थिक सहायता प्रदान की जाती है। प्रधानमंत्री के संबोधन के बाद संस्थान द्वारा किसान-वैज्ञानिक विचार-मंचन का आयोजन किया गया। इसमें वैज्ञानिकों ने किसानों को आधुनिक पि तकनीकों और समेतक .पि प्रणाली के बारे में विस्तार से जानकारी दी। चर्चा के दौरान बाइब्रस्ट और आर्द्रभूमि क्षेत्रों में समेतक पि मांडल के उपयोग पर जोर दिया गया। इसके अतिरिक्त, बकरी पालन, मत्स्य पालन, कुक्कुट पालन और मशरूम उत्पादन के उन्नत तरीकों की जानकारी दी गई। बागवानी फसलों के प्रबंधन, पि उपज के प्रसंस्करण, मूल्य संवर्धन तथा मार्केटिंग की रणनीतियों पर भी चर्चा हुई। पशुधन से जुड़े रोगों की पहचान, समय पर उपचार और वैज्ञानिक प्रबंधन पर एक विशेष सत्र भी आयोजित किया गया, जिससे किसानों को काफी लाभ मिला। स कार्यक्रम में लगभग 250 स्थानीय किसानों ने भाग लिया। उन्होंने वैज्ञानिकों से सीधे सवाल पूछे और महत्वपूर्ण सुझाव प्राप्त किए। कार्यक्रम में संस्थान के निदेशक डॉ. सुशील कुमार, वरिष्ठ वैज्ञानिक डॉ. पंच कौशिक भारती, डॉ. विजय सिंह मोना, डॉ. नवीन पाटिल, डॉ. रवि कुमार, डॉ. कौशिक बनर्जी, डॉ. नीला माधव पटनायक, ईजीनियर विकास पराडकर, डॉ. राकेश एन., डॉ. प्रताप एवं डॉ. लालेला ओझा सहित कई विशेषज्ञ उपस्थित थे।

हिन्दुस्तान

गांवों में बसती है देश की आत्मा: सांसद

पीपराकोटी, एक संवाददाता। देश की आत्मा गांव में बसती है, जिसके कारण पूर्व प्रधानमंत्री लालबहादुर शास्त्री ने जय जवान जय किसान का नारा दिया। वहीं पूर्व पीएम अटल बिहारी वाजपेयी ने जय जवान, जय किसान, जय विज्ञान का नारा दिया। वहीं से किसानों की हित और विकास की सोच आगे बढ़ी। परन्तु बीच के सरकारों ने किसानों के हित व विकास फाइलों में बंद कर दिया। जब गरीब का बेटा देश का प्रधानमंत्री बना तो महात्मा गांधी व अटल बिहारी वाजपेयी के सोच को धरातल पर उतारा। उक्त बातें बुधवार को स्थानीय महात्मा गांधी समेतक कृषि अनुसंधान संस्थान में आयोजित कृषि विविधकरण और पारिस्थितिक-दीप प्रज्वलित कर कार्यक्रम का उद्घाटन करते सांसद सह पूर्व केंद्रीय मंत्री क्षेत्रीय खेती पर दो दिवसीय राष्ट्रीय संगोष्ठी के समापन के अवसर पर सांसद सह पूर्व केंद्रीय मंत्री राधामोहन सिंह ने कही। इसके पूर्व उन्होंने विधायक श्यामबाबू प्रसाद यादव, पूर्व विधायक सचिन्द्र प्रसाद सिंह, उपमेवर डॉ. लालबाबू प्रसाद, एमजीआईएफआरआई के निदेशक डॉ. ए.एस.के.पूर्व के साथ संयुक्त रूप से दीप प्रज्वलित कर कार्यक्रम का उद्घाटन किया। कहा कि पीएम मोदी अनुसूचित जाति के विकास के लिए कई योजनाएं लाए हैं। जिसमें अनुसूचित जाति उपयोजना लागू किया है।

Joining, Promotion, Superannuation and Transfer-2025



Mr. Rajat Sharma
Administrative Officer
has joined on 21 April 2025



Mr. D K Sapra
Administrative Officer
was transferred to
ICAR-CARI, Izatnagar
on 23 April 2025



Dr. Naveenkumar B. Patil
Sr. Scientist
(Agricultural Entomology)
has joined on 8 May 2025



Dr. V.S. Meena
Sr. Scientist
(Soil Science)
has joined on 5 June 2025



Mrs. Haritha Mohan M
Scientist
(Plant Pathology)
was transferred to
ICAR-IIHR, CHES, Chettalli
on 20 June 2025



Dr. Geeta
Scientist
(Poultry Science)
was transferred to
ICAR-CARI, Izatnagar
on 20 June 2025



Dr. Subham Mukherjee
Scientist
(Soil Science)
has joined on 25 July 2025



Mr. Gautam Chatterjee
UDC (on deputation)
has joined on
8 September 2025
from ICAR-NRC on Yak



Dr. Shreya Nivesh
Scientist (LWME)
was transferred to
ICAR-IISWC,
RS Agra on
30 September 2025



Dr. Pratapa M G
Scientist
(Fish Health)
has joined on
27 October 2025



Dr. Lamella Ojha
Scientist
(Animal Nutrition)
has joined on
27 October 2025

Personnel

Scientific

SN	Name	Designation	Subject
1.	Dr. S.K. Purbey	Director-A & Principal Scientist	Fruit Science
2.	Dr. S.K. Singh	Principal Scientist	Agronomy
3.	Dr. P.K. Bharti	Senior Scientist	Livestock Production & Management
4.	Dr. Naveenkumar B. Patil	Senior Scientist	Agricultural Entomology
5.	Dr. Vijay Singh Meena	Senior Scientist	Soil Science
6.	Dr. Ravi Kumar	Scientist	Fisheries Resource Management
7.	Dr. Koushik Banerjee	Scientist	Agricultural Meteorology
8.	Er. Vikas Paradkar	Scientist	Farm machinery and Power Engineering
9.	Dr. Jadhav Amol Kailas	Scientist	Fruit Science
10.	Dr. Neela Madhav Patnaik	Scientist	Agricultural Extension
11.	Mr. Rakesh N	Scientist	Agricultural Economics
12.	Dr. Subham Mukherjee	Scientist	Soil Science
13.	Dr. Pratapa M G	Scientist	Fish Health
14.	Dr. Lamella Ojha	Scientist	Animal Nutrition

Administration			Technical (T1)		
SN	Name	Designation		Name	Designation
1	Mr. Rajat Sharma	Administrative Officer	9	Mr. Rahul Kumar	T1
2	Mr. Sanjib Kumar	Assistant Administrative Officer	10	Mr. Adarsh Gautam	T1
3	Mr. Ashwini Kumar	Finance & Accounts Officer	11	Mr. Vishnu Kaji	T1
4	Mr. Roushan Roy	Establishment and Store Section	12	Mr. Vishal Kumar	T1
5	Mr. Vivek Kumar	Account and Audit Section	13	Mr. Abhinav Kumar	T1
6	Mr. Anant Kumar	Purchase Section			
7	Mr. Himanshu Kumar	Bill Section			
8	Mr. Gautam Chatterjee	UDC			

Budget & Expenditure

(Financial year-2025-2026)

2025-26 (Amount in Lakh)				
S.no.	Major Heads of Account	Other than NEH, TSP & SCSP	NEH	SCSP
(A)	Capital			
1	Building & Original works	188.95	0.00	0.00
2	Equipment (Laboratory & Farm Equipment including plant & machinery)	58.53	0.00	6.90
3	Vehicles & Vessels	22.17	0.00	0.00
4	Information Technology & ICT	30.36	0.00	0.00
5	Livestock	0.00	0.00	0.00
6	Library	0.1	0.00	0.00
7	Furniture & Fixture	7.36	0.00	0.00
	SUB-TOTAL (A)	307.47	0.00	6.90
(B)	REVENUE			
1	Research and operational Expenses	29.72	50.00	15.00
2	Administrative Expenses	69.47	0.00	0.00
I).	Travelling Expenses	8.25	0.00	0.00
3	Miscellaneous Expenses	2.56	0.00	0.00
	SUB-TOTAL (B)	110.00	50.00	15.00
(C)	Establishment Expense	408.88	0.00	0.00
	GRAND TOTAL (A+B+C)	826.35	50.00	21.90



भारतीय कृषि अनुसंधान परिषद
Indian Council of Agricultural Research
महात्मा गाँधी समेकित कृषि अनुसंधान संस्थान
Mahatma Gandhi Integrated Farming Research Institute
(ICAR-MGIFRI)
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