



ICAR-IIFSR Newsletter



ICAR- INDIAN INSTITUTE OF FARMING SYSTEMS RESEARCH, MODIPURAM, MEERUT

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Published by:

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From Director's Desk

Dear Readers,

Greetings!

With great pleasure that I present you to this edition of the ICAR-IIFSR News Letter showcasing the significant research achievements, outreach/extension activities and advancements in sustainable agriculture spearheaded by the institute during six months. As we continue our journey towards developing innovative solutions for climate-resilient agriculture, our focus remains on fostering integrated farming systems, pioneering cutting-edge technologies that benefits the farming community. This edition highlights the significant strides of our scientists to develop sustainable agricultural practices, climate adaptation strategies, and technology-driven solutions that are shaping the future of farming. During this period, we had the honour of hosting esteemed dignitaries and experts who visited our institute to witness the first-hand impactful research being conducted and share their wisdom for further improvement. These visits reinforce our commitment to excellence and inspire us to push the boundaries of agricultural innovation. Furthermore, our institute has actively organized a range of events, workshops, and training programs aimed at knowledge dissemination, skill development, and stakeholder engagement. Our outreach and extension activities continue to bridge the gap between scientific research and farming communities, ensuring that our research findings translate into real-world applications. By working closely with farmers, policymakers, and industry partners, we strive to make agriculture more sustainable, resilient, and profitable for all stakeholders.



Its time to express my satisfaction for work contemplated by dedicated researchers, staff, and collaborators of IIFSR whose unwavering commitment and hard work drive our institute's success. These contributions are invaluable, and together, as researcher and agriculture practitioners will continue to shape the future of sustainable agriculture. As we move forward, let us remain motivated and inspired to embrace innovation, sustainability, and inclusivity in all our endeavours. Let us continue to work together to make a meaningful impact on the agricultural landscape and contribute to a more food-secure and climate-resilient world.



About the Institute

With a 70 years' history, the ICAR-Indian Institute of Farming Systems Research has played a pivotal role in advancing agronomic management practices and advocating for alternative cropping systems. Originally focused on fertilizer experimentations, it initiated the "Simple fertilizer trials on Cultivars Fields" in 1953 under the Indo-American Technology Cooperation Agreement. This initiative expanded into the 'All India Coordinated Agronomic Experiment Scheme (AICAES)' in 1956, emphasizing agronomic research encompassing cultural practices, irrigation, nutrition and multiple cropping. Recognizing the necessity for a holistic approach, the institute underwent a transformation during the 7th five-year plan in 1989, becoming the 'Project Directorate for Cropping Systems Research (PDCSR).' Subsequently during the 11th five-year plan, it was re-designated as the 'Project Directorate of Farming Systems Research (PDFSR).' In 2014, during the 12th five-year plan, PDFSR attained the status of a full-fledged institute and was renamed the "ICAR-Indian Institute of Farming Systems Research". The institute comprising the AICRP on IFS (74 centres) and AI-NP-OF (20 cooperating centres), covering 26 States/UTs and is organized into three research divisions (Integrated Farming Systems, Organic Agriculture Systems and Cropping Systems & Resource Management), on Project coordinating unit, and one section (Technology Transfer and Assessment) to comprehensively address its mandate.

Research Highlights

Evaluation of extension methods for effective dissemination of Integrated Farming Interventions

(Nisha Verma, Nirmal, Chandra Bhanu, P.P. Singh, Vipin Kumar Chaudhary, Poonam Kashyap, P.C. Jat, Raghavedra KJ, M. Shamim)

Farmers from Meerut and Muzaffarnagar districts in the North-Western Plain Region were studied, with 100 farm households selected from each district, totaling 200 households. The dominant farming system (47%) is crop (sugarcane/sorghum/paddy-wheat/mustard/blackgram) + dairy (1–2 cows + 1–2 buffaloes). Farmers rely mainly on input dealers, neighbor farmers, and innovative farmers for farming-related information. Sugarcane processing industries (82.35%), State Agricultural Universities (58.8%), and agriculture/horticulture officers (52.94%) are key extension sources. High cultivation costs (50%) and labor scarcity (33%) are major constraints. Net

income is Rs 1,47,670 per hectare annually due to high operational costs. High-yielding varieties and crop-livestock integration are adopted by 50% and 27% of farmers, respectively.



Plate 1: Farmer-Scientist Interaction meetings in (a) Pachenda Kala village, Muzaffarnagar (b) Jeetpur village, Meerut.

Modeling the effect of nitrogen options under conventional and conservation tillage on growth, yield and nitrogen dynamics in Maize and Wheat

(Kamlesh Kumar, AL Meena, PC Ghasal and Nirmal)

The CERES-Maize and CERES-Wheat models in DSSAT were used to simulate crop growth, yield, and nitrogen dynamics for maize (JC4, Sujata) and wheat (DBW 222) under conventional and conservation tillage. The model predicted anthesis, maturity, and leaf area index (LAI) within 5–11% of observed values. LAI showed an RMSE of 0.49 (8.11%) for maize and 0.28 (6.69%) for wheat. RMSE for maize grain and biomass was 323 and 1119 kg ha⁻¹, with nRMSE of 5.83% and 9.21%, respectively. Grain yield predictions were accurate, except for slight overestimation in N0 treatments under both tillage methods. The model effectively simulated soil ammonium, nitrate, and nitrogen uptake within a 4–10% error margin.

Development of regenerative Agroforestry based IFS model for sustainable production and livelihood

(Nirmal, Kamlesh Kumar, Sunil Kumar, Raghavendra KJ)

In the Kharif season of 2023, greengram, bajra, and jowar were intercropped with moringa, teak, and shisham. The

highest greengram yield was in the teak+greengram combination (489 kg/ha), followed by shisham (374 kg/ha), control (362 kg/ha), and moringa (329 kg/ha) due to shading. For bajra, the highest green fodder yield was with teak (180.07 q/ha), followed by shisham (178.27 q/ha), moringa (157.24 q/ha), and control (132.87 q/ha).

Jowar yield was highest with shisham (140 q/ha), followed by control (136.50 q/ha), teak (89 q/ha), and moringa (75.83 q/ha). In the Rabi season, the highest mustard yield was in the control (600.87 kg/ha), followed by teak (553.28 kg/ha), moringa (448.55 kg/ha), and shisham (352.41 kg/ha). Total fodder yield of 65.73 q, was possible due by hybrid napier grass as intercrop and fodder cactus on the boundary.



Plate 2: Fodder Cactus and Moringa + Greengram in Agroforestry based IFS model

Concepts/Methods Developed

Development of Carbon Negative Integrated Farming System Model for the Upper Genetic Plain of Uttar Pradesh

(L.R. Meena, N. Subash and A.L. Meena)

To mitigate the negative impacts of climate change, integrate farming system (IFS) is a constructive approach to solve the issues related to sustainability, livelihood, food and nutritional security, income generation, soil health, environmental safety and resource conservation. Based on these points an IFS model was developed on 1.5 ha of land under assured irrigation facility, which compressed of various components like crops (1.04ha), Dairy (2 buffaloes + 1 cow), Horticulture (0.22ha), Fish (0.1ha), Kitchen garden (20m²), vermicompost (0.001 ha), Mushroom(0.01ha), boundary plantation of fruit trees (0.004ha). IPCC Tier-II approach was used to calculate the total GHG emission from the different modules of IFS model. It showed that the amount of GHG emission from

different sources was 24527.08 kg CO₂ eq. whereas, the total sink was 44028 kg CO₂ eq from same section of land. Thus, the 1.5 ha IFS model was carbon negative (-19501 kg CO₂ eq).

New Appointments/Superannuation

New appointment

Smt. Himanshu Chauhan joined as STO on 31 May 2024.



Superannuation



Sh. R.B. Tewari,
CTO 29 Feb 2024



Dr. Dhananjay
Tripathi, CTO
31 March 2024



Dr. Om Kumar
Tomar, CTO
30 June 2024

Meetings Organized

- Annual Group Meeting (AGM) of All India Network Project on Organic Farming at UAS, Dharwad during 08-09 January, 2024.



- Annual Group Meeting (AGM) of AICRP on Integrated Farming Systems at IGKV, Raipur during 29-31 January, 2024.



- Co-Design Workshop organized at Mandla during 15-16 February 2024 under the IWMI Project.



- Annual Review and Planning Meeting (ARPM) for the CIMMYT-funded project, “Additive Intercropping in Wide-Row Crops for Resilient Crop Production in Bangladesh, Bhutan, and India” from May 13-15, 2024 at IIFSR.
- Meeting of QRT team at CTRI, Thiruvananthapuram for review of AICRP-IFS and AINP-OF centres on 7-8 June, 2024.



- Validation workshop on Hazards and Adoption strategies of various crops for Heuristic Model under ACASA Project on 12 June, 2024.

HRD and Capacity Building Activities

- Online data submission training for AICRP-IFS through IASRI on 15 January, 2024.



- Organized “Entrepreneurship Development in Youths through Training on Components of Integrated Farming Systems/ Organic Farming” 29-31 January, 2024 jointly by Division of Organic Agriculture System and ABI IIFSR Modipuram centre.

- Training on “Nature Positive Farming in view of climate change and food security” organized at ICAR-IIFSR, Modipuram during 19-23 February, 2024
- One day Farmers-Scientist Interaction with 26 organic strawberry farmers of NGO from Bijnor, Uttar Pradesh organized on 29 April 2024



- Awareness programme towards SHG formulation and self-employment, 13th May 2024 Khurja, Bulandshahar
- Training on Farm and Laboratory Management for technical staff of AU, Kota during 20-25 May, 2024.

Exhibition of IIFSR Technologies



- ICAR IIFSR Modipuram participated in Kisan Mela 2024 “Natural Farming and Nutri-Cereal Cultivation for Farmers Prosperity” at DRPCA, Pusa, Samastipur, Bihar from 24-26 February 2024 and was awarded Best Stall Award.



- Participation of ABI IIFSR incubatee women SHG's in Potato recipe competition organized by ICAR-CPRI, Modipuram on 9th March 2024.



- Exhibition by FPO's, start-ups and SHG's on the occasion of Institute's 35th Foundation day held on 1st April 2024.



- Display of IFS, OF, NF technologies to Hon'ble speaker of Uttarakhand Legislative Assesmbly, Mrs Ritu Khanduri Bhushan on the occasion of National Conference on Living with Nature: Soil Water and Society in Ecosystem Conservation (LNSWSEC-2024) held at Dehradun during June 20-22, 2024.

Celebration of Events

International Women Day on 8th March 2024



35th Foundation Day of Institute

Institute celebrated its 35th Foundation Day on April 1, 2024, in a hybrid mode. The event was inaugurated by Dr. S.K. Chaudhari, with Dr. K.K. Singh as Chief Guest. Notable attendees included Dr. Rajbir Singh, Dr.



A. Velmurugan, Dr. A.K. Mohanty, and Dr. R.K. Singh. Dr. S.K. Chaudhary highlighted the institute's progress and urged adapting research to global changes. Dr. Sunil Kumar presented the 2023 Progress Report, noting significant achievements in IFS models.

World Environment Day

Institute celebrated the 'World Environment Day' on June 5th 2024 with the slogan 'Our Land Our Future' through a sustainable farming awareness programme and a plantation programme in selected OFR villages Pepla, Shaphpur Jainpur and Shekhpuri of Block Rohta under the LiFE mission.



हिंदी कार्यशाला का आयोजन

संस्थान में दिनांक 11 जून, 2024 को त्रैमासिक हिंदी कार्यशाला का आयोजन किया गया। कार्यशाला का मुख्य विषय 'कार्यालय एवं प्रयोगशाला सुरक्षा' पर केंद्रित रहा। निदेशक महोदय ने अपने संबोधन में बताया कि सभी संबंधित कार्यालय कर्मियों



को इसके प्रति जागरूक एवं प्रबंधन तकनीकी के प्रायोगिक ज्ञान से परिपूर्ण होना चाहिए। ताकि हर व्यक्ति अपने स्तर पर इन आपदाओं से निपटने में सक्षम हो। कार्यक्रम के विषिष्ट अतिथि एवं अग्निशमन अधिकारी मेरठ श्री आकाश चौहान ने विभिन्न प्राकृतिक एवं मानवनिर्मित आपदाओं जैसे आग लगने, गैस रिसाव, भूकंप इत्यादि के दौरान लिए जाने वाले बचाव व सुरक्षात्मक उपायों के ऊपर अपना व्याख्यान दिया और सभी कार्यालय कर्मियों को आकस्मिक आग की घटनाओं से निपटने हेतु प्रायोगिक टिप्स दिए।

10th International Yoga Day

Celebrated International Day of Yoga on June 21, 2024, with the theme “Yoga for Women Empowerment.” Participants included institute employees, their families, and local residents. Chief guest Dr. Rashmi Tiwari highlighted yoga’s health benefits.



Awards and Honours



- Dr. Sunil Kumar, Director, ICAR-IIFSR received NAAS Fellow Award 2024 at NASC, New Delhi on 4th June 2024. Best oral presentation award to Dr. Nirmal and team during



National Symposium on Sustainable Agriculture Practices for Food Security and Environmental Conservation organized by SVBPUAT Meerut on 15 March 2024.

- Dr. Kamlesh Kumar, Scientist received the R Pingh Memorial Gold Medal Award for Excellence in Academics and Research in Ph.D. during the 62nd Convocation of ICAR-IARI, New Delhi.



ICAR-IIFSR received Swachhata Pakhwada Award- 2023 by ICAR.



- Outstanding Team Award-Extension/Outreach program conferred to Dr Nisha Verma, Dr VP Chaudhary, Dr Suresh Malik, Dr Chandra Bhanu, Dr Amit Nath (ICAR-IIFSR) Dr Alka Verma, Dr Dinesh Kumar (GBPUA&T, Pantnagar) under the project “Cluster based on-farm participatory research in Farming Systems under Tribal Sub plan” on the occasion of Institute’s 35th Foundation Day on April 1, 2024.
- Best paper award entitled “Ekikrit krishi pranaalee ke mmadhyam se aadivaasee kisaanon kee aajeevika evam poshan suraksha by Nisha Verma, VP Chaudhary, Chandra Bhanu, Suresh Malik, Alka Verma, Amit Kumar, N Ravisankar and A S Panwar published in Gehun Evam Jaun Swarnima 2022, Vol 14, ICAR-IIWBR Karnal on 9th February 2024 by ICAR-IIWBR Karnal.
- Best Division Award to Integrated Farming Systems Division comprising (R P Mishra, P Punia, S Malik, P P Singh, Nirmal, Kamlesh Kumar) on the occasion of 35th Foundation of ICAR-IIFSR, Modipuram.
- Best Research Team Award to R.P. Mishra, N. Ravisankar, P.C. Ghasal, D.Dutta, S. Malik, Amit

Nath, A.K. Prusty, Poonam Kashyap, M. Shamim and Kmalesh Kumar on the occasion of 35th Foundation of ICAR-IIFSR, Modipuram.



- Dr Chandra Bhanu received Fellow of Indian Phytopathological Society (FPSI) award from Indian Phytopathological Society, Delhi at ICAR-Indian Institute of Sugarcane Research, Lucknow, Uttar Pradesh, during February 1-3, 2024.
- Dr. M.A.Ansari, received the Young Scientist Award during 35th Foundation day of ICAR-Indian Institute of Farming Systems Research, Modipuram on 1st April, 2024

- One day Interface meeting on 11.06.2024 under the IWMI Project “Transformational agroecology across food, land and water systems” at KVK, Mandla in collaboration with JNKVV, Jabalpur and also distributed the inputs for kharif season to 40 farmers.

Monitoring of field Experiments



Monitoring of AICRP-IFS and AINP-OF centres (Akola, Karjat, Raipur and Wardha)

Outreach/Extension Activities



- Awareness campaign on crop diversification under LiFE mission held on 27.05.2024 under the chairmanship of Ms. Shubha Thakur, Additional Secretary, MoA&FW.
- IP awareness week: various activities through invited guests having expertise in the intellectual Properties had given lectures and awareness programme, which was held from 12-19 June 2024.

- Input distribution to 52 farmers under the Awareness campaign on Crop Diversification under Life Mission held on 27th May 2024.

Important Visitors

Sh. Manoj Ahuja, Secretary, Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi on 14 March, 2024



Dr S K Chaudhary, DDG (NRM), ICAR-IIFSR, Moddipuram on 30 March to 01 April, 2024



Shri Franklin Khobung, Joint Secretary (NRM), DA&FW visited and interacted with scientists of ICAR-IIFSR on May 09, 2024



Mrs Subha Thakur, Additional Secretary, Government of India on 27th May, 2024



Glimpse of QRT Meetings



QRT meeting at UAS, Dharwad during January 10-11, 2024



QRT meeting at ICAR RC for NEH Region, Umiam, Meghalaya during May 06-07, 2024



QRT meeting at IGKV, Raipur during 29-31 January 2024



QRT meeting at ANDUAT, Ayodhya during June 21-22, 2024



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