



PULSES

NEWSLETTER

ICAR-Indian Institute of Pulses Research, Kanpur

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Celebration of World Pulses Day and a National Conference on Pulses

The ICAR–Indian Institute of Pulses Research celebrated World Pulses Day on 10th February 2026 with great enthusiasm by organizing a three-day National Seminar (February 10–12) on the theme “Pulses, Planet and People : Sustainable Livelihood and Nutritional Security under Changing Climate Scenario (#NCPulses2026).”

Dr. Trilochan Mohapatra, Chairperson, PPV&FRA, graced the occasion as Chief Guest, while Dr. Mangala Rai, former Secretary, DARE and Director General, ICAR, attended as the Chairman. Dr. S.K. Chaturvedi, President, ISPRD, was also present.



In his address, Dr. Trilochan Mohapatra highlighting the importance of World Pulses Day, celebrated since 2016, noted the substantial progress made in crops such as chickpea and mungbean,

while emphasizing the need to enhance production of pigeonpea and blackgram. Dr. Mohapatra highlighted the need for achieving



self-sufficiency in pulses such as pigeonpea and urdbean by enhancing productivity and area expansion. He stressed on the importance of advanced breeding tools, including marker-assisted and genomic selection, for developing climate-resilient and disease-resistant varieties, with a vision to increase pulses production by 10 million tonnes in the coming years.

Welcoming the dignitaries, Dr. G.P. Dixit, Director of the Institute, emphasized that various national and international projects have significantly contributed to the development of improved varieties, technologies, and human resource capacity. He also mentioned that continuous efforts are being made to provide advanced quality seeds to farmers and to achieve new milestones in pulse production.

Dr. Dixit further noted that India is the largest producer and consumer of

pulses due to its predominantly vegetarian population. While production is increasing annually, he stressed the need to produce an additional 10 million tonnes over the next five years. He also highlighted recent initiatives such as the *Vikasit Krishi Sankalp Abhiyan*, under which extensive farmer outreach and data collection were carried out. He informed that several important research proposals have been prepared under the recently launched National Mission on Pulses.



Dr. Dixit, highlighted the progress achieved under mission-mode programmes and emphasized the need to bridge yield gaps, improve seed replacement rates, and adopt emerging technologies such as speed breeding and genome editing.

The three-day event served as a vibrant platform for scientists, policymakers, industry stakeholders, and students to deliberate on the pivotal role of pulses in ensuring nutritional security, enhancing climate resilience, and promoting sustainable livelihoods. Dr. Rai underscored the significance of pulses in combating malnutrition,

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improving dietary quality, and addressing soil degradation. He emphasized the integration of pulses into rice fallows and diversified cropping systems to enhance soil fertility through biological nitrogen fixation and reduce dependence on chemical fertilizers. Emphasizing the need to further enhance productivity, the Chairman highlighted the progress made in the seed sector, particularly through the Seed Hub initiative, which has improved seed availability. However, he pointed out

the need for strengthening breeder seed production and improving seed quality. Expressing concern over declining soil health, he emphasized on deficiencies of essential nutrients such as zinc, sulphur, potash, and iron, and urged scientists to address these challenges in their research.

On this occasion, scientists were felicitated by ISPRD for their outstanding contributions to pulse research. The Chief Guest released a Souvenir, along with publications

titled “Microbial Technologies for Grain Legumes” and “Handbook on Pesticide Usage in Pulses.” During the seminar, scientists deliberated on various aspects related to pulse research and development.

The vote of thanks was delivered by Dr. Narendra Kumar, Secretary, ISPRD. The programme was effectively conducted by Dr. Meenal Rathore, Principal Scientist, and Dr. Rekha Rani, Scientist.

Research Advisory Committee Meeting Held

The 31st meeting of Research Advisory Committee (RAC), ICAR-Indian Institute of Pulses Research, Kanpur was held on March 30-31, 2026 under the Chairmanship of Dr. R.M. Chauhan, Former Vice-Chancellor, Sardarkrushinagar Dantiwada Agriculture University, Gujarat both in physical and virtual mode. Dr. A.R. Sharma, Ex-Director Research-RLBCAU, Jhansi, Dr. Sarvjeet Singh, Ex-Professor (PB&G), PAU, Ludhiana, Dr. Ashwani Kr. Basandrai, Ex-Professor (Plant Pathology), HPKV, Palampur, Dr. Sanjeev Gupta, ADG (O&P), ICAR, New Delhi and Dr. G.P. Dixit, Director, ICAR-IIPR, Kanpur, attended the meeting in physical mode. Dr. Debasis Chattopadhyay, Director (Additional Charge), NIPGR, New Delhi, Member of RAC attended the meeting on virtual mode.



The Chairman, Dr. R.M. Chauhan, gave opening remarks, in which he appreciated the Institute's accomplishments on natural/organic farming, conservation agriculture, research efforts on genome editing and bioinoculants. The RAC-committee members expressed their satisfaction over the appropriateness of actions taken on different recommendations of the 30th RAC and approved it. The Heads of Divisions at IIPR, Kanpur, Head/in-charges of regional centre/stations

presented the salient achievements accomplished by their respective divisions and stations during 2025-26. The Chairman and members of RAC appreciated the achievements and had elaborate discussions for further improvement. Proceedings with RAC-recommendations were submitted to the Council for approval. RAC recommended two- and three-way crosses in breeding programmes to enhance genetic recombination and broaden variability. It also suggested to improve farm mechanization and large-scale demonstrations of ICAR certified IIPR technologies that may improve awareness and technology adaptation by farmers. The RAC has applauded the research efforts of IIPR and congratulated Director, IIPR and his team for a well-organized RAC meeting.

Rabi Pulse Scientists' Meet Cum Field Day Organized

The “Rabi Pulse Scientists' Meet-cum-Field Day” was successfully organized at ICAR- Indian Institute of Pulses Research (IIPR), Kanpur on 09th February, 2026. The inaugural session, chaired by the Director, ICAR-IIPR, brought together over 30 scientists from across the country, representing State Agricultural Universities and leading national research institutions, including Bhabha Atomic Research Centre (BARC), Trombay. A key highlight of the programme was the visit to *Rabi* pulse research fields at IIPR Research Farm. Scientists evaluated

and identified promising germplasm and breeding materials suited to their respective crop improvement programmes. These field-level interactions fostered knowledge exchange and strengthened collaborative efforts toward accelerating varietal development and enhancing productivity.

The valedictory session was chaired by Dr. Trilochan Mohapatra, Chairperson, Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), New Delhi, and former Secretary (DARE) & Director

General (ICAR). He interacted with participating scientists, appreciated the Institute's contributions to pulse research, and offered valuable insights to further refine research strategies and collaborative initiatives aimed at achieving future production and sustainability goals. The meet-cum-field day served as a vibrant platform for scientific dialogue, germplasm exchange, and strategic planning, reaffirming ICAR-IIPR's commitment to boosting pulse productivity and advancing national food and nutritional security.

Research Highlights

Mapping QTLs for Physiological Traits in Lentil

A genetic linkage map with 441 SNPs covering 3009.1 cM in length across seven chromosomes developed from a biparental mapping population (IPL 98/193×EC 208362) used to map QTLs for physiological traits. This study identified four QTLs (*qRWC_IPL_{II-44.5}*, *qRWC_IPL_{IV-127.3}*, *qRWC_IPL_{V-333.5}*, and *qRWC_IPL_{V-343.7}*) for relative water content (RWC) on chromosomes 2, 4, and 5, which explained 20.5% to 24.33 % of total phenotypic variation. A season-specific QTL (*qMSI_IPL_{VI-276.5}*) located on chromosome for year 2024-25

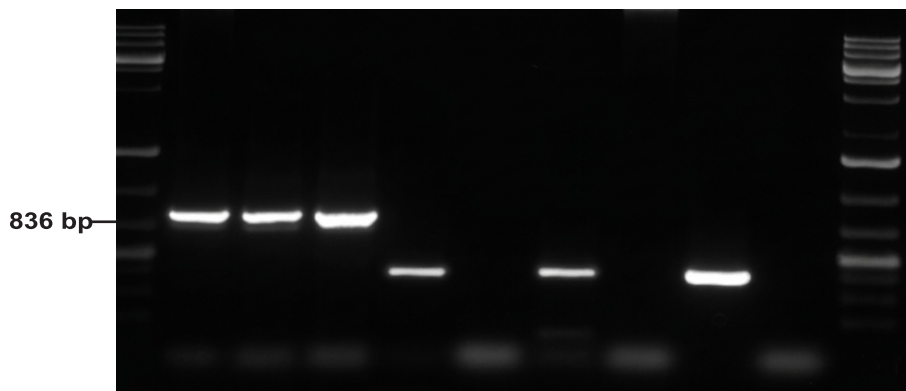
was identified for membrane stability index (MSI), explaining 6.93% of the phenotypic variance. Two QTLs (*qSPAD_IPL_{V-466.9}* and *qSPAD_IPL_{V-506.6}*) were detected on chromosome 5 for SPAD value. These explained 13.52% to 23.67% of total phenotypic variance. Three QTLs (*qNDVI_IPL_{I-18.5}*, *qNDVI_IPL_{I-32}*, and *qNDVI_IPL_{V-596.1}*) explaining 15.75% to 21.99% of phenotypic variance were identified on chromosomes 1 and 5 for the normalized difference vegetation index (NDVI). The identified QTLs for RWC, SPAD, and NDVI explained a

relatively higher proportion of phenotypic variance, indicating their importance as major QTLs, whereas MSI was governed by a minor QTL. The study has also demonstrated the significance of chromosome 5 having key genomic regions for physiological traits associated in drought tolerance. This information can be useful in the development of climate-resilient lentil varieties through breeding programmes.

Jitendra Kumar, Amit Kumar Sharma,
Sachin Kumar, Debjyoti Sen Gupta, G.P. Dixit

Allelic Variation at the *Sfl1* Locus Associated with Flower Number in Chickpea

Flower number per node is an important yield-determining trait in chickpea. In this study, allelic variation at the *Sfl1* (*Single flower 1*) was analyzed in chickpea genotypes differing in pod number, including single-pod (GNG 2171, HC5, JAKI 9218), double-pod (JG 62, RSG 888) and partially triple-pod (IPC 20-16) types. PCR amplification using *Sfl1* specific primers resulted in presence absence variation (PAV) of the target locus. The amplified product was further analyzed through sequencing to identify allelic polymorphism associated with variation in pod number among chickpea genotypes.

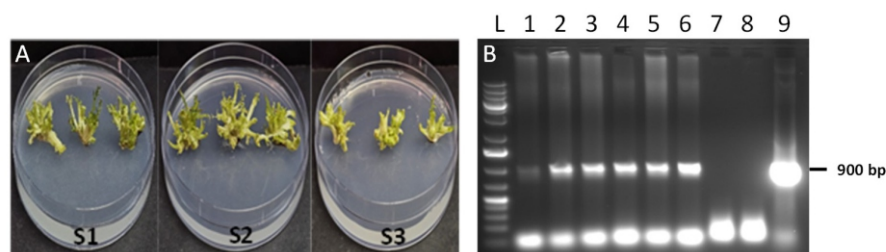


Presence-Absence variation (PAV) of *Sfl1* locus in chickpea M = 1 Kb Plus; 1 = GNG * 2171 2=JAKI 9218; 3=HC 5; 4 = JG * 62 (UCP) 5=JG 62; 7 = RSG * 888 8 = IPC * 20 - 166 (UCP) 9 = IPC * 20 - 166 6 = RSG * 888 (UCP)

Manish Kumar, Jamal Ansari,
Harshita Sharma and Alok Das

Chickpea Regeneration through GRF-GIF Translational Fusion System

Regeneration efficiency in chickpea is more often genotype dependent. Application of modern cutting edge tools across chickpea genotypes requires employment of developmental regulators to augment organogenesis pathway. We report co-expression of Growth Regulating Factor (GRF) and GRF-Interacting Factor (GIF) gene as fusion proteins enhance regeneration efficiency in different chickpea cultivars. We designed GRF-GIF fusion gene (S1) and miR396-resistant, rGRF-GIF (S2) and sub-cloned into plant binary vector, pCambia2300 and the native vector as control (S3). Embryonic



A: Multiple shoot induction from explants (cv. JG 11), 3 weeks post-bombardment (S1: GRF-GIF; S2: rGRF-GIF and S3: Vector PCAMBIA2300)

B. L = 1kb plus DNALadder, Lanes 1-6 = Shoots with GRF-GIF cassette (900 bp) Lane 7 = Control shoots, Lane 8 = No template control (NTC), Lane 9 = Positive Control

axis chickpea explants were independently bombarded with tungsten coated independent vectors S1, S2, and S3 using particle

bombarded gene gun. After 3 weeks post-bombardment, multiple shoots emergence was observed in the explants in three tested chickpea

cultivars. In cultivar, JG 11, explants bombarded with S2 produced 12-14 shoots per explant followed by 9-11 in S1 and 5-6 in control (S3). In JG 24, shoot numbers were 7-8 (S2), 5-7 (S1) and 3-4 (S3). Similarly, in GNG 2171, S2 generated 9-12 shoots, 7-8 (S1) and 4-6 (S3) (Fig A). Enhanced

shoot number per explants increase the possibility of improved regeneration in different chickpea cultivars with an implication of genotype independency. Integration of gene cassette in putatively transformed explants were checked employing PCR with gene cassette

specific oligos. These findings demonstrate the potential of GRF-GIF fusion technology as a significant tool for chickpea regeneration and genetic enhancement.

Harshita Shamra, Manish Kumar,
Jamal Ansari and Alok Das

QTL Mapping for MYMIV Resistance in Urdbean (*Vigna mungo* L. Hepper)

Urdbean or blackgram varieties are regularly infected with Mungbean Yellow Mosaic India Virus resulting into huge losses to the farmers, if susceptible varieties are grown. ICAR-IIPR developed urdbean varieties over the years have shown high degree of genetic resistance in the farmers' fields to this deadly disease. This study was designed to identify genomic regions controlling genetic resistance to this disease in urdbean. A RIL population of urdbean was phenotyped over six years in ICAR-IIPR, Kanpur and ICAR-NEH, Tripura and genotyped with genotyping-by-sequencing technique. An ultra-high-density genetic map was developed comprised of 9,683 SNPs. QTL analysis of these data resulted into the identification of 32 QTLs for

MYMIV resistance distributed across 11 chromosomes and phenotypic variation explained ranging from 2.99 to 16.99 per cent. Among these, major QTLs explaining >10 per cent phenotypic variation were identified on chromosomes 1(3 QTLs: $qMYMIV_IPU_{1.754}$, $qMYMIV_IPU_{1.762}$, $qMYMIV_IPU_{1.642}$), 9(4 QTLs: $qMYMIV_IPU_{9.81}$, $qMYMIV_IPU_{9.1205}$, $qMYMIV_IPU_{9.1136}$, $qMYMIV_IPU_{9.1259}$), 5 (1 QTL: $qMYMIV_IPU_{5.534}$), 4 (1 QTL: $qMYMIV_IPU_{4.426}$) and 11 (1 QTL: $qMYMIV_IPU_{11.252}$) across different years and locations. Further, QTLs will be analysed to identify candidate genes and development of markers for MYMIV resistance.



MYMIV disease symptoms of F_1 derived from resistant (DPU 88-31) and susceptible (LBG 685) parents used for the development of RIL population

$qMYMIV_IPU_{1.762}$, $qMYMIV_IPU_{1.642}$, $qMYMIV_IPU_{9.81}$, $qMYMIV_IPU_{9.1205}$, $qMYMIV_IPU_{9.1136}$, $qMYMIV_IPU_{9.1259}$, $qMYMIV_IPU_{5.534}$, $qMYMIV_IPU_{4.426}$ and 11 (1 QTL: $qMYMIV_IPU_{11.252}$) across different years and locations. Further, QTLs will be analysed to identify candidate genes and development of markers for MYMIV resistance.

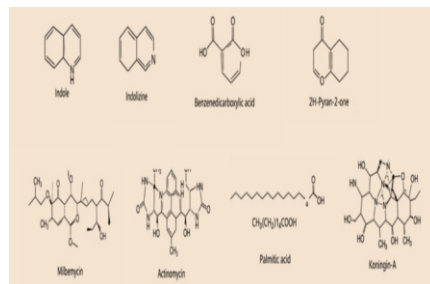
$qMYMIV_IPU_{11.252}$) across different years and locations. Further, QTLs will be analysed to identify candidate genes and development of markers for MYMIV resistance.

Debjoyoti Sen Gupta, Sachin Kumar, Jitendra Kumar,
Shivam Kumar, S.P. Das, S. Banik, P.K. Katiyar and G.P. Dixit

Profiling of Bioactive Metabolites from PGPRs and *Trichoderma* Isolates for Biocontrol and PGP Potential

GC-MS profiling of eight PGPR isolates of *Bacillus* and *Pseudomonas* revealed 45 volatile metabolites, including key antimicrobial compounds such as Indole, Indolizine, Milbemycin, and Actinomycin. Two plant growth-promoting metabolites (L-Proline and L-Leucine derivatives) were also detected, indicating strong PGPR potential. Similarly, GC-MS analysis of fifteen *Trichoderma* isolates

identified over 100 secondary metabolites, including benzenedicarboxylic acid, 2H-pyran-2-one, palmitic acid, and konigin-A. Furanone derivatives showed mycoparasitic and plant growth-promoting activity. Overall, both PGPR and *Trichoderma* isolates demonstrate strong potential for biocontrol and plant growth promotion in pulses.



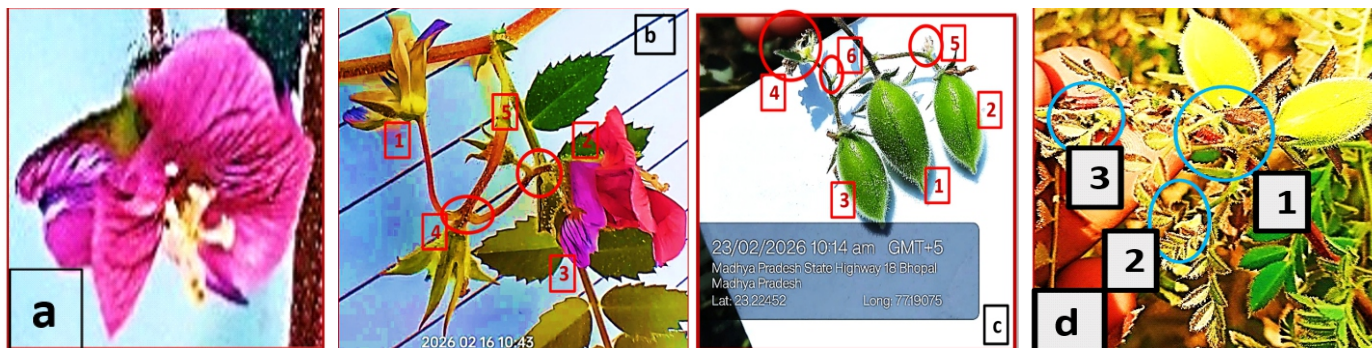
R.K. Mishra, Sonika Pandey
and Shailesh Dixit

Stable Multiple Flower Expression in Anthocyanin-Rich *Desi* Chickpea

The stable multiple flowers (3-7 flowers per peduncle) producing genotype IC 395468-1 was identified in collection of 735 germplasm lines screened during 2017-18 (*Rabi* season) under CRP on Agrobiodiversity in Chickpea Project at IIPR RS, Bhopal, MP, India (Funded by ICAR). IC 395468-1 along with checks (RVG 202 and JG 16) were evaluated across 8

growing seasons (2017-18 to 2025-26) for stability in replicated trials (3 replications) and collected data was subjected to analysis. Stability analysis (Eberhart and Russel Model, 1966) showed predictable and stable performance across environments. The genotype IC 395468-1 recorded a pooled mean of 5.72 flowers per peduncle at upper nodes (3-5) in 100% of plants

across seasons, with low phenotypic variability (CV = 4.30%). Pooled ANOVA revealed highly significant genotypic variance ($P \leq 0.01$), while environmental and G×E interaction effects were non-significant, indicating strong genetic fixation of the trait. In contrast, check varieties RVG 202 and JG 16 consistently produced a single flower per peduncle across



(a) Open flower, (b) multi-flowers / peduncle (1-5), (c) developed pods (1-3); open flowers (4-5) and developing bud (6), (d) vegetative growth with flower buds arose from the peduncle. Sequential multi-flowering and podding in anthocyanin rich *desi* chickpea genotype IC 395468-1

all environments. Basal nodes uniformly exhibited solitary flowers, suggesting positional regulation of floral expression. These findings confirm the stability

and environmental resilience of the multi-flowers phenotype in IC 395468-1 and highlight its potential utility in chickpea improvement programmes aimed at enhancing

reproductive efficiency and yield stability.

Archana Singh, Gayacharan and
Bhojraj Parmar

प्रौद्योगिकी हस्तांतरण

Programmes Organized (Jan-March 2026) Pulses Innovation Hub (PIH), ABIC, ICAR-IIPR, Kanpur

- **Entrepreneurship Development Programme (EDP) on bio-pesticide production** was organized during January 07-09, 2026 at PIH-ABIC, ICAR-IIPR, Kanpur. A total of 09 trainees from Uttar Pradesh and Madhya Pradesh successfully participated in the programme. The training focused on hands-on learning, production techniques, and entrepreneurial opportunities in bio-pesticide development.



- **SHITIZ Incubation Programme:** The programme included a one-month online incubation phase (09th Jan. to 11th Feb.) complemented by bootcamps for idea refinement and capacity building. It culminated in a 3-day physical programme (March 09-11) for 7 selected incubates under the Pulses Innovation Hub, focusing on mentoring, technical validation, and business acceleration.



- **Incubation Support:** Two new start-ups, Kush Crop and Shivay Dhasmana Pvt. Ltd., have signed MoUs and completed technology transfer agreements with ABIC, ICAR-IIPR, Kanpur on pulses seed production and pulses processing. This initiative aims to promote commercialization of pulse-based technologies, support enterprise development, and strengthen the agri-startup ecosystem.



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A total of 75 Farmers' Training Programmes (Capacity building/Skill development programme) were conducted on Pulse Production Technologies under the 'Promotion of Pulses in NE Region, benefiting 2,917 farmers. Over 531 numbers of demonstrations of pulse production technologies, with 1,417 beneficiaries



farmers. Fertilizers, including bio-fertilizers, FYM and vermicompost were distributed to the tune of 194.72 q fulfilling the requirements of 1,266 farmers whereas 21.91 q of plant protection chemicals were distributed among 1,170 beneficiaries for combating weeds, insect-pests and diseases in the region. In addition, total 2,061 units of petty equipment were distributed to 2,103 farmers aiding small agricultural operations in pulses cultivation. These programmes were conducted in collaboration with local ICAR centres, CAUs, SAUs, and State Agricultural Departments, covering farmers across various districts of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Dr. DP Patel, Nodal Officer (ICAR-IIPR NER Programme) monitored the activities in Nagaland and Assam from 6th to 14th January 2026 during which he also participated in a One-day farmers' training-cum-input distribution programme organized by



Anup Chandra, DP Patel
and GP Dixit

The induction of new licensees is expected to enhance technology outreach, improve adoption among farmers, and boost productivity in pulse-based systems.



2. Technology Licensing of Crop Varieties through ITMU, ICAR-IIPR

During January–March 2026, ICAR-IIPR, through ITMU, facilitated licensing of improved pulse crop varieties to industries, promoting rapid technology transfer, strengthening seed systems, enhancing farmer access to quality seeds, and supporting sustainable agricultural productivity.

- Aruti Agrotech India Pvt. Ltd., Agra, UP
- Rich Grow Pvt. Ltd., Noida, UP
- Revanchal Seed Pvt. Ltd., Bhopal, MP
- Sahib (SK) Seeds Pvt. Ltd., Karnal, Haryana
- SAI Seeds. Sitarganj, Uttarakhand



Activities conducted Under Schedule Caste Sub-Plan

- Two Programmes conducted Under Schedule Caste Sub-Plan. Following activities were conducted at ICAR-IIPR, RRS, Bhopal and ICAR-IIPR, RRC, Bikaner.
- Distributed 141.65 q quality seeds of mungbean and urdbean and 1,600 kg. NPK Fertilizer Mixture under Schedule Caste Sub-Plan at ICAR-IIPR, Kanpur.



PERSONNEL

Appointments, Promotions, Transfers, etc.

Appointments

Sl.	Name	Post	Date of joining
1.	Sh. Roshan Kumar Gupta	Assistant	13.02.2026
2.	Sh. Avinash Kumar	Assistant	16.02.2026

Promotions

Sl.	Name	Promoted to	w.e.f.
1	Sh. Sukadeo Mahto, Administrative Officer	Senior Administrative Officer	01.01.2026
2	Mrs. Reeta Mishra, Assistant	Assistant Administrative Officer	06.01.2026
3	Sh. R.K.S. Yadav, STO (T-6)	ACTO (T-7/8)	01.05.2023
4	Sh. Lakhan, STO	ACTO (T-7/8)	01.01.2024
5	Sh. Malkhan Singh, STO	ACTO (T-7/8)	01.01.2024

Transfers

Sl.	Name	Designation	From	To	Date
1	Dr. Kancheti Mrunalini	Scientist	ICAR-IIPR, Kanpur	ICAR-ISRI, Lucknow	07.01.2026

Retirements

Sl.	Name	Post held	Date of retirement
1	Sh. R.K. Singh	STO (T-6)	31.01.2026
2.	Sh. Krishna Autar	STO (T-6)	31.01.2026
3.	Sh. Santosh Kumar Sharma	Sr. Technician (T-2)	31.01.2026

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Director's Desk

Dear Readers,

Pulses are an integral component of the Indian food system, providing plant-based dietary protein to a large segment of the population and playing a critical role in ensuring nutritional security. Owing to their unique ability to fix atmospheric nitrogen through symbiotic association with rhizobia, pulse crops enrich soil fertility, improve soil health, reduce dependence on costly synthetic nitrogen fertilizers, and promote crop diversification, thereby contributing to sustainable and resilient agricultural systems.

Due to their relatively low water and input requirements, pulses are well suited to dryland and rainfed farming conditions and offer attractive economic returns to farmers. With the increasing demand for plant-based protein in India, enhancing pulse production and productivity has become a national priority. Expansion of pulse cultivation can significantly increase farmers' income, reduce rural poverty, and strengthen the agricultural economy across rural India.

To achieve these goals, several institutional extension and outreach programmes have been implemented to disseminate knowledge, build farmers' capacity, and promote the adoption of improved production

technologies. These initiatives include Farmer FIRST Programme, Farmers' Exposure Visit-cum-Field Training Programme, Scientists–Farmers Interaction Programmes and Field Days, Institute–FPO Linkage Programme and Frontline Demonstrations (FLDs) on



improved pulse production technologies, distribution of quality seed of high-yielding varieties, and training on value addition, grading, processing, and packaging of pulse crops.

In its continued efforts to improve pulse productivity, the ICAR-Indian Institute of Pulses Research (IIPR) has launched comprehensive Pulse Agro-Advisory Initiative involving scientists from *Krishi Vigyan Kendras* (KVKs), agricultural universities, and other stakeholders across different cropping seasons. The Institute maintains strong collaborative partnerships with National Agricultural Research System (NARS) institutions, KVKs, State

Agriculture Departments, and international organizations such as ICRISAT and ICARDA to accelerate pulse production and technology dissemination.

In addition to its regular extension activities, the Institute actively participated in the National Fertilizer Awareness Campaign, a Government of India initiative jointly organized by the Indian Council of Agricultural Research (ICAR) and the Department of Agriculture and Farmers Welfare (DA&FW), Ministry of Agriculture and Farmers Welfare. The campaign aims to promote balanced and judicious use of fertilizers and agricultural inputs for sustaining long-term agricultural productivity and environmental health.

The Institute remains committed to creating awareness about advancements in pulse research and production technologies and to realizing India's vision of self-reliance in pulse production. Through the integration of basic and applied research, development of high-yielding and climate-resilient varieties, and effective transfer of technologies to farmers' fields, the Institute continues to contribute significantly towards strengthening the nation's food, nutritional, and livelihood security.

(Girish Prasad Dixit)

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