

Dr. Prithwiraj Dey

Assistant Professor (Agricultural Systems & Management)

Agricultural & Food Engineering Department
Indian Institute of Technology Kharagpur
West Bengal-721302, India

prithwi@agfe.iitkgp.ac.in; mailprithwi@gmail.com
+(91) 3222 283138 (Office)

Google Scholar ID: https://scholar.google.com/citations?user=xLQ_WNgAAAAJ&hl=en
ORCID: <https://orcid.org/0000-0001-5373-1876>

Work Experience

Assistant Professor, AGFE Department, IIT Kharagpur (Sep, 2022- T/D)
Assistant Warden, B.R. Ambedkar Hall of Residence, IIT Kharagpur (Jan, 2023- T/D)
Member, Institute Sustainability Committee, IIT Kharagpur (Jan, 2023 – T/D)
Subject Matter Specialist (Crop Production), Gr. A., Govt. of India, Dr. Rajendra Prasad Central Agricultural University, Samastipur, Bihar (Mar, 2022- Sep, 2022)
In-Charge, Commercial Seed Production Farm, KVK-Gopalgaaj, Dr. RPCAU, Bihar (Mar, 2022-Sep, 2022)
Senior Research Fellow, Department of Agronomy, GBPUAT, Pantnagar (Sep, 2021-Mar, 2022)
ICAR-Sr. Research Fellow (Aug, 2018-Sep, 2021)
ICAR-Jr. Research Fellow (Jun, 2016- Jun, 2018)
Life Member, Indian Society of Agronomy (Mar, 2023-T/D)
Life Member, Indian Society of Weed Science (Mar, 2018-T/D)

Scientific Roles

Editorial Board Member, BMC Agriculture (Springer Nature) w.e.f. 05 Nov. 24
Guest Editor, Computers & Electronics in Agriculture (Elsevier; IF 7.7)
Guest Editor, Frontiers in Sustainable Food Systems (Frontiers; IF 3.7)
Reviewer,
Computers & Electronics in Agriculture, Scientific Reports; Agricultural Water Management, European Journal of Agronomy, Fields Crop Research, BMC Plant Biology, Geoderma, Industrial Crops & Products, Journal of Integrative Agriculture, Biosystems Engineering, Biomass & Bioenergy, Communications in Soil Science and Plant Analysis, Environmental Technology Innovation, Journal of Agriculture & Food Research, Journal of Natural Fibers etc.

Academic roles

New Course Development

Conservation Agriculture & Sustainable Technologies (3-0-0), Elective, PG/RS Level
(Approved vide Senate Item 355.G.I.C.8, 355th Senate Meeting, IIT Kharagpur)

Courses Taught

UG Level Courses

Crop Production Technology (AG20202, AG20201), 3-0-0, UG Level
Crop Production Technology Lab. (AG29001, AG29002), 0-0-1, UG Level
DIY Project (DY17003), 0-0-3, UG Level

PG/RS Level Courses

Management and productivity (AG60062), 3-1-0, PG/RS level
Soil-Plant-Water relationships (AG60092), 3-1-0, PG/RS level
Crop Production Systems (AG60061), 3-1-0, PG/RS level
Crop Production Systems Lab. (AG69027), 0-0-3, PG/RS level
Agricultural Production Systems Lab. (AG69035), 0-0-3, PG/RS level

Projects handled/ongoing

Challenge Grant, IIT Kharagpur; Fund acquired: 200 Lakh INR

Host Institute: IIT Kharagpur

Role: **Co-Principal Investigator** (May, 2024-Oct, 2024)

“AI-DRIVEN AGRISMART SOLUTIONS: DIGITAL SOIL HEALTH CARD”

Project domain: AI-ML, Soil Testing, Precision Agriculture, Soil health

Anglo American Consultancy Grant; Fund acquired: 75.00 Lakh INR

Host Institute: IIT Kharagpur & University of Edinburg, UK

Role: **Principal Investigator** (Feb, 2024-Feb, 2028)

“INVESTIGATION OF NUTRIENT RELEASE FROM POLYHALITE-BIOCHAR COMPOSITE FERTILISER”

Project domain: Biochar composite, Nutrient release, Fertilizer Development, Carbon footprint, Crop growth,

DST-SERB Start-Up Grant (SRG); Fund acquired: 30.00 Lakh INR

Host Institute: IIT Kharagpur

Role: **Principal Investigator** (Sep, 2023-Sep, 2025)

“HARNESSING THE POTENTIAL OF RICE-FALLOW LANDS FOR FIBRE FLAX PRODUCTION FOR HIGH QUALITY RAW FLAX FIBRE PRODUCTION”

Project domain: Fibre Production, Linen Fibre, Rice-fallow utilization, Make-in-India

Faculty Startup Grant (FSRG), IIT Kharagpur; Fund acquired: 25.00 Lakh INR

Host Institute: IIT Kharagpur

Role: **Principal Investigator** (Sep, 2023-Sep, 2026)

“INVESTIGATION ON VERTICAL AND TEMPORAL REDISTRIBUTION DYNAMICS OF SOIL CARBON AND NUTRIENTS UNDER VARIED ESTABLISHMENT AND RESIDUE REGIMES”

Project domain: Carbon sequestration, Green House Emission, Climate Change

Varaha ClimateAg Pvt. Ltd.; Fund acquired: 41.68 Lakh INR

Host Institute: IIT Kharagpur

Role: **Principal Investigator** (Mar, 2023-Mar, 2025)

“STUDIES ON GREENHOUSE EMISSION AND SOIL ORGANIC CARBON DYNAMICS IN RICE-WHEAT SYSTEM UNDER DIFFERENT ESTABLISHMENT AND RESIDUE MANAGEMENT REGIMES”

Project domain: Carbon sequestration, Green House Emission, Climate Change

Govt. of Bihar; Fund acquired: 100 lakh INR

Host Institute: KVK-Gopalganj, Dr.RPCAU, Samastipur
Role: **Co-Principal Investigator** (Mar, 2022-Sep, 2022) [Left the Institute]
“CLIMATE RESILIENT AGRICULTURE PROJECT”
Project domain: Climate change, Resilient Cropping, Sustainable agriculture

Academics

Visiting Scholar DEFIAA-3 (Agroalimentaire)

French Ministry of Food and Agriculture,
University of Toulouse, ENSFEA Toulouse, EPLEFPA Pau, Perpignan, EPLEFPA Rodez La Roque, France

PhD (Major: Agronomy, Minor: Soil Science)

Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, UK, India
Research: “Optimization of fibre flax production technology through agronomic management”
Specializations: Nutrient Management, Biomass, Fibre Crops, Plant Adaptations

Remote Sensing Essentials (NPTEL Certificate Course)

Indian Institute of Technology Roorkee (Through NPTEL)

Master of Science in Agriculture (Agronomy)

Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, UK, India
Research: “Weed Management Options for Spring Sweet Corn (*Zea mays L. var. saccharata*)”
Specializations: Weed Management, Plant Growth, Biotic Stress, Ecotoxicity

Bachelor of Science in Agriculture Honours (Agriculture)

Uttar Banga Krishi Viswavidyalaya, WB, India

Academic Attainments

Bharat Ratna Pt. G.B. Pant Award & Gold Medal-2021-22: Awarded by GBPUAT, Pantnagar, India

ISA Best PhD Thesis Award- 2022: Awarded by Indian Society of Agronomy, New Delhi, India

AIU Best Thesis Award-2021-22: Awarded by Association of Indian Universities, New Delhi, India

Student Excellence Award-2022: Awarded by CoA, GBPUAT, Pantnagar, India

Student Excellence Award-2021: Awarded by CoA, GBPUAT, Pantnagar, India

ICAR- Junior Research Fellowship (2016-18): Awarded by ICAR, New Delhi, India (AIEEA-PG-2016, AIR-09, Agronomy).

ICAR- Senior Research Fellowship (2018-21): Awarded by ICAR, New Delhi, India (AICE-PGS-2018, AIR-13 in NRM-II, Agronomy).

Best M.Sc. Student Award-2018: Awarded by GBPUAT, Pantnagar, India

Young Achiever Award-2019: Awarded by Agricultural & Environmental Technology Development Society (AETDS), UK

Young Scholar Award-2019: Awarded by Society for World Environment, Food and Technology (SWEFT), New Delhi, India

Young Scientist Award-2021: Awarded at International Conference on New Paradigms for Agriculture, Food and Sustainability Concerns (NPAFSC-2021), Raichur, Karnataka, India.

Selected Publications

- Kumar, N., Bhunia, S., Dey, P. (2024) Data envelopment analysis and multi-objective genetic algorithm-based optimization of energy consumption and greenhouse gas emissions in rice-wheat system. *Energy*. 133680
<https://doi.org/10.1016/j.energy.2024.133680>
- Pyne, S., Negi, M.S., Mahapatra, B.S., Kumar, A., Dey, P. & Pandit, P. (2024) Hybrid Modeling and Management of Lodging in Subtropical Fiber Flax: Optimizing Plant Nutrition for Sustainable Cultivation, *Journal of Natural Fibers*, 21:1, 2394139,
<https://doi.org/10.1080/15440478.2024.2394139>
- Patra, P. S., Saha, R., Ahmed, A. S., Kanjilal, B., Debnath, M. K., Paramanik, B., ... Others. (2024). Enhancing aromatic rice production through agronomic and nutritional management for improved yield and quality. *Scientific Reports*, 14(1), 15555.
<https://doi.org/10.1038/s41598-024-65476-5>
- Dey, P., Mahapatra, B. S., Mitra, B., Sarvadamana, A. K., Chowdhury, A. R., Rana, A., & Mandal, D. (2024). Potential Nexus Approach for Sustainable Soil Productivity Resource Management. In *Environmental Nexus for Resource Management* (pp. 243–273). CRC Press. <https://doi.org/10.1201/9781003358169-12>
- Kundu, A., Kundu, C. K., Dey, P., Rana, S., Majumder, J., Bera, A., ... Others. (2024). Management of soil cover and tillage regimes in upland rice-sweet corn systems for better system performance, energy use and carbon footprints. *Heliyon*, 10(4).
<https://doi.org/10.1016/j.heliyon.2024.e26524>
- Saraswat, A., Ram, S., Sharma, S., Chawla, R., Khardia, N., Chauhan, D., Viswakarma, D.K., Raza, M.B., Rajput, V.D., Dey, P., Meena, R.S., Behera, B. (2024). EDCs exposure-induced alteration in the germination, growth, and physiological trait of the plant. *Emerging Contaminants: Sustainable Agriculture and the Environment*, 159.
<https://doi.org/10.1016/B978-0-443-18985-2.00001-8>
- Kohli, K, Kumar, A., Singh, O., Dey,P. (2024). Composite edible coatings can extend shelf-life and maintain postharvest qualities of guava under natural storage. *Horticulture, Environment, and Biotechnology*. <https://doi.org/10.1007/s13580-023-00576-1>
- Mondal, S., Pradhan, P., Das, B., Kumar, D., Paramanik, B., Yonzon, R., ... Others. (2024). Genetic characterization and diversity analysis of indigenous aromatic rice. *Heliyon*, 10(10). <https://doi.org/10.1016/j.heliyon.2024.e31232>
- Pandit, Pramit, Sagar, A., Ghose, B., Dey, P., Paul, M., Alqadhi, S., ... Abdo, H. G. (2023). Hybrid time series models with exogenous variable for improved yield forecasting of major Rabi crops in India. *Scientific Reports*, 13(1), 22240.
<https://doi.org/10.1038/s41598-023-49544-w>
- Bhatt, M. K., Singh, D.K., Raverkar, K. P., Chandra, R., Pareek, N., Dey, P., Pramanick, B., ... Others. (2023). Effects of varied nutrient regimes on soil health and long-term productivity in a rice--wheat system: insights from a 29-year study in the mollisols of the Himalayan Tarai region. *Front. Sustain. Food Syst.*, 7(2023).
<https://doi.org/10.3389/fsufs.2023.1206878>
- Mathur, P., Sanyal, D., & Dey, P. (2021). Optimization of growth conditions for enhancing the production of microbial laccase and its application in treating antibiotic contamination in wastewater. *3 Biotech*, 11, 1–15.
- Saha, A., Samanta, S., Dey, P., Halder, R., & Sinha, A. C. (2023). Choice of varieties and organic-inorganic nutrient integrations in rainfed buckwheat can affect the performance of succeeding green gram grown on residual fertility. *Archives of Agronomy & Soil Science*, <https://doi.org/10.1080/03650340.2023.2195431>
- Kumar, A., Singh, O., Kohli, K., & Dey, P. (2023). Developmental Fruit Quality Based Clustered Normalized Maturity Index Can Ensure Proper Harvesting Time of Ber. *Communications in Soil Science and Plant Analysis*, <https://doi.org/10.1080/00103624.2023.2195431>

- Pramanick, B., Mahapatra, B. S., Datta, D., Dey, P., Singh, S. P., Kumar, A., ... Awasthi, N. (2023). An innovative approach to improve oil production and quality of mustard (*Brassica juncea* L.) with multi-nutrient-rich polyhalite. *Heliyon*, 9(3). <https://doi.org/10.1016/j.heliyon.2023.e13997>
- Lal, D., Dadrwal, B. K., Saha, D., Chand, S., Chauhan, J., Dey, P., ... Others. (2021). Molecular advances in plant root system architecture response and redesigning for improved performance under unfavorable environments. In *Frontiers in Plant-Soil Interaction* (pp. 49–82). Academic Press.
- Lenka, N. K., Lenka, S., Yashona, D. S., Shukla, A. K., Elanchezhian, R., Dey, P., ... Patra, A. K. (2021). Carbon dioxide and/or temperature elevation effect on yield response, nutrient partitioning and use efficiency of applied nitrogen in wheat crop in central India. *Field Crops Research*, 264, 108084.
- Lenka, N. K., Lenka, S., Singh, K. K., Kumar, A., Aher, S. B., Yashona, D. S., ... Patra, A. K. (2019). Effect of elevated carbon dioxide on growth, nutrient partitioning, and uptake of major nutrients by soybean under varied nitrogen application levels. *Journal of Plant Nutrition and Soil Science*, 182(4), 509–514.
- Pant, S., Pratap, T., Singh, V. P., Singh, S. P., Dey, P., & Singh, V. V. (2022). Maize establishment methods and weed management effect on weeds, maize productivity and economics. *Indian Journal of Weed Science*, 54(2), 197–200.
- Sahoo, S. K., Mishra, K. N., Panda, N., Sethi, D., & Dey, P. (2023). Carbon and Nitrogen Mineralization Kinetics in Soil Under Differential Nutrient Management Regimes in Inceptisols of Coastal India. *Communications in Soil Science and Plant Analysis*, 54(20), 2782–2799.
- Mahapatra, B. S., & Dey, P. (2022). Integrated Management Practices for Incremental Wheat Productivity. In *New Horizons in Wheat and Barley Research* (pp. 367–392). Springer Nature Singapore.
- Dey, P., Mahapatra, B. S., Negi, M. S., Singh, S. P., Paul, J., & Pramanick, B. (2022). Seeding density and nutrient management practice influence yield; quality and nutrient use efficiency of flax grown under sub-tropical humid Himalayan tarai. *Industrial Crops and Products*, 178, 114616.
- Mitra, B., Chowdhury, A. R., Dey, P., Hazra, K. K., Sinha, A. K., Hossain, A., & Meena, R. S. (2022). Use of Agrochemical in Agriculture: Alarming Issues and Solutions. In *Input Use Efficiency for Food and Environmental Security* (pp. 85–122). Springer Nature Singapore.
- Dey, P., Mahapatra, B. S., Pramanick, B., Pyne, S., & Pandit, P. (2022). Optimization of seed rate and nutrient management levels can reduce lodging damage and improve yield, quality and energetics of subtropical flax. *Biomass and Bioenergy*, 157, 106355.
- Dey, P., Mahapatra, B. S., Juyal, V. K., Pramanick, B., Negi, M. S., JaiPaul, & Singh, S. P. (2021). Flax processing waste -- A low-cost, potential biosorbent for treatment of heavy metal, dye and organic matter contaminated industrial wastewater. *Industrial Crops and Products*, 174(114195).
- Sahoo, S. K., Dwivedi, G. K., Dey, P., & Praharaj, S. (2021). Green synthesized ZnO nanoparticles for sustainable production and nutritional biofortification of green gram. *Environmental Technology & Innovation*, 24, 101957.
- Maitra, S., Pramanick, B., Dey, P., Bhadra, P., Shankar, T., & Anand, K. (2021). Thermotolerant soil microbes and their role in mitigation of heat stress in plants. *Soil Microbiomes for Sustainable Agriculture: Functional Annotation*, 203–242.
- Pandit, P., Dey, P., & Krishnamurthy, K. N. (2021). Comparative Assessment of Multiple Linear Regression and Fuzzy Linear Regression Models. *SN Computer Science*, 2(76).
- Dey, P., Mahapatra, B. S., Pramanick, B., Kumar, A., Negi, M. S., JaiPaul, ... Singh, S. P. (2021). Quality optimization of flax fibre through durational management of water retting technology under sub-tropical climate. *Industrial Crops and Products*, 162, 113277.
- Banik, S., Dey, P., & Pandit, P. (2020). Effect of Different Insecticides on Yield, Yield Attributes and Pollinator Behaviour of Different Pigeon Pea Varieties. *Legume Research*.

Dey, Prithwiraj, Pratap, T., Mishra, S., & Pandit, P. (2018). Weed seed bank in soil as affected by different weed management practices in spring sweet corn. *Indian Journal of Weed Science*, 50(3), 269–272.

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