# DR. MANOJIT CHOWDHURY


**Assistant Professor, Visva-Bharati (A Central University)**

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## Career Objective

To contribute effectively as an Assistant Professor and Researcher in Agricultural Engineering (Farm Machinery and Power) at Visva-Bharati by promoting mechanization solutions that enhance agricultural productivity, reduce drudgery and improve resource use efficiency. I aim to bridge the gap between research and grassroots application by developing and disseminating appropriate farm machinery technologies, empowering farmers through skill development and supporting sustainable and climate-resilient agricultural practices.

## Area of Work

Precision Agriculture | Variable Rate Technology | Artificial Intelligence | Electronics in Agriculture | Drones and Robotics | Smart Instrumentation for Resource Conservation

## Academic Background

| Examination/Degree | Institute/Board | CGPA/% | Passing Year |
|---|---|---|---|
| Ph.D. (Farm Machinery and Power Engineering) | Division of Agricultural Engineering, Indian Agricultural Research Institute, New Delhi | 8.39 | 2024 |
| M. Tech. (Farm Machinery and Power) | Agriculture & Food Engineering Department, Indian Institute of Technology, Kharagpur | 8.06 | 2020 |
| B.Tech. (Agril. Engg.) | Uttar Banga Krishi Viswavidyalaya, Pundibari, Coochbehar (W.B.) | 7.94 | 2018 |

## Work Experience

| Position held | Institute | From | To | Pay Scale |
|---|---|---|---|---|
| Subject Matter Specialist | ICAR-Central Institute of Agricultural Engineering, Bhopal | 20.06.2024 | 16.01.2026 | Level 10 (5400 GP) |
| Assistant Professor | Visva-Bharati (A Central University), Shantiniketan | 19.01.2026 | Till date | Academic Level 10 (6000 GP) |

## Publications

- **Chowdhury, M.**, Khura, T. K., Parray, R. A., Upadhyay, P. K., Kushwaha, H. L., Lama, A., Kushwah, A., Malkani, P., Madhusudan B. S. & Chaudhary, S. (2026). Development of an on-field system for rapid detection and mitigation of nitrogen stress in direct seeded rice. *Results in Engineering*, 108758.
- **Chowdhury, M.**, Thomas, E. V., Jha, A., Kushwah, A., Kurmi, R., Khura, T. K., Sarkar, P., & Patra, K.

(2023). An automatic pressure control system for precise spray pattern analysis on spray patternator. *Computers and Electronics in Agriculture*, *214*, 108287.

- **Chowdhury, M**., Khura, T. K., Parray, R. A., Upadhyay, P. K., Kushwaha, H. L., Lama, A., & Kushwah, A. (2025). Multi-vegetation indices based handheld device for precise nitrogen assessment and prescription in direct seeded rice. *Computers and Electronics in Agriculture*, *229*, 109886.
- **Chowdhury, M**., Khura, T. K., Upadhyay, P. K., Parray, R. A., Kushwaha, H. L., Singh, C., ... & Mani, I. (2024). Assessing vegetation indices and productivity across nitrogen gradients: a comparative study under transplanted and direct-seeded rice. *Frontiers in Sustainable Food Systems*, *8*, 1351414.
- **Chowdhury, M**., Kumar Khura, T., Ahmad Parray, R., Kushwaha, H. L., Upadhyay, P. K., Jha, A., ... & Kumar Prajapati, V. (2024). The use of destructive and nondestructive techniques in concrete nitrogen assessment in plants. *Journal of Plant Nutrition*, *47*(14), 2271-2294.
- **Chowdhury, M**., Lande, S. D., Khura, T. K., Parray, R. A., Upadhyay, P. K., & Kumar, P. (2023). Energetics and Cost Economics of Wheat–based Cropping System. *Annals of Agricultural Research,* 44(1), 37-45.
- **Chowdhury, M**., Kushwah, A., Satpute, A. N., Singh, S. K., & Patil, A. K. (2023). A Comprehensive Review on Potential Application of Nanomaterials in the Field of Agricultural Engineering. *Journal of Biosystems Engineering*, 48, 457-477.
- **Chowdhury, M**., Banerjee, A., Das, R., Das, S., & Prasad, K. (2025). Influence of Temperature and Mass Flow Rate on Heat Transfer Characteristics in Parallel Flow Corrugated Plate Heat Exchanger. *Journal of Agricultural Engineering (India)*, *62*, 1.
- **Chowdhury, M**., Khura, T. K., Parray, R. A., Upadhyay, P. K., Kushwaha, H. L., Lama, A., ... & Ansh, A. K. Impact of Nitrogen Variability on Yield Dynamics and Economics Viability of Transplanted and Direct Seeded Rice. *Journal of Experimental Agriculture International, 47,* 207-217.
- Sunil Kumar, T., Virdia, H. M., Patel, K. G., Ragi, S., **Chowdhury, M**[*]., Kumar, P., ... & El-Shinawy, D. M. (2024). Effect of summer legume residue incorporation and fertilizer regimes on rice growth, yield, and nutrient uptake. *Frontiers in Sustainable Food Systems*, *8*, 1467201.
- T Kumar, S., Virdia, H. M., Patel, K. G., **Chowdhury, M**[*]., Satya, S. C., Abdelmaksoud, S., ... & Elwakeel, A. (2025). Residual effect of summer legumes incorporation on soil nutrient status and nutrient use efficiency of kharif rice. *Frontiers in Sustainable Food Systems*, *9*, 1535162.
- Kumar, S., **Chowdhury, M**[*]., Kushwah, A., Ansh, A. K., Kumar, K., Chouhan, P., ... & Yumnam, C. (2024). Development and Performance Evaluation of an Economical Solar Still for Water Purification. *Journal of Scientific Research and Reports*, *30*(9), 495-506.
- Mondal, K., **Chowdhury, M**., Dutta, S., Satpute, A. N., Jha, A., Khose, S., ... & Das, S. (2025). Synergising agricultural systems: A critical review of the interdependencies within the water-energy-food nexus for sustainable futures. *Water-Energy Nexus*, 8, 167-188.
- Dutta, S., Islam, Z., Das, S., Barman, A., **Chowdhury, M**., Mondal, B. P., ... & Manna, D. (2025). Harmonizing plant resilience: unveiling the symphony of membrane lipid dynamics in response to abiotic stresses: a review. *Discover Plants*, *2*(1), 61.

- Jha, A., Garg, S., Satpute, S., Prasad Singh, J., Singh, D., Gupta Phutela, U., **Chowdhury, M.** & Singh, D. (2024). Isotherm and kinetic modelling for assessing the effectiveness of economical adsorbents in sewage water treatment. *Indian Journal of Chemical Technology,* 31, 438-450.
- **Chowdhury, M**., Anand, R., Dhar, T., Kurmi, R., Sahni, R. K., & Kushwah, A. (2024). Digital insights into plant health: exploring vegetation indices through computer vision. In *Applications of Computer Vision and Drone Technology in Agriculture 4.0* (pp. 7-30). Singapore: Springer Nature Singapore.
- Pradhan, N. C., Naik, M. A., **Chowdhury, M***., Kushwah, A., Asha, K. R., Dhar, T., ... & Satpute, A. N. (2024). Robotic Seeding or Sowing System in Smart Agriculture. In *Artificial Intelligence and Smart Agriculture: Technology and Applications* (pp. 495-520). Singapore: Springer Nature Singapore.
- Anand, R., Nalla, S. S., Nasreen, S., **Chowdhury, M**., B. S, M., Pandey, A., ... & Gaddamwar, R. B. (2024). Fruit Counting and Analysis Using Artificial Intelligence Approaches. In *Artificial Intelligence Techniques in Smart Agriculture* (pp. 93-114). Singapore: Springer Nature Singapore.
- Patil, A. K., Satpute, A. N., Singh, N., Satankar, M., Singha, P. S., Chaturvedi, S., **Chowdhury, M**., & Barman, S. (2025). Engineering Interventions for High Biofuel Production in Forage Crops. In *Forage Crops in the Bioenergy Revolution: From Fields to Fuel* (pp. 81-92). Singapore: Springer Nature Singapore.
- Satpute, A. N., Gavhane, K. P., Kaur, S., Jha, A., Pradhan, N. C., & **Chowdhury, M**. (2024). Integration of AI and IoT in soilless cultivation to power sustainable agricultural revolution. In *Artificial Intelligence and Smart Agriculture: Technology and Applications* (pp. 387-411). Singapore: Springer Nature Singapore.
- Kushwah, A., Sharma, P. K., Kushwaha, H. L., Sharma, B. B., Singh, N., Nag, R. H., **Chowdhury, M**., & Salem, A. (2025). Image-based maturity detection for selective cauliflower harvesting in field condition. *Smart Agricultural Technology*, 100985.
- Malkani, P., Khura, T. K., Mani, I., Kushwaha, H. L., Sagar, A., Srivastava, A., Asha, K. R., **Chowdhury, M**., Dharmender (2026). Development and evaluation of a mobile tire testing device for rolling resistance under varying speed, load, and cone index. *Journal of Terramechanics,* 123, 101118.
- Kushwah, A., Sharma, P. K., Kushwaha, H. L., Sharma, B. B., Shrivastava, A. K., Nag, R. H., **Chowdhury, M**., & Yadav, R. (2024). Hybrid taguchi-grey relational analysis approach for optimizing cutter operational parameters in selective cauliflower harvesting. *Scientific Reports*, *14*(1), 29709.
- Malkani, P., Mani, I., Sahoo, P. K., Parray, R. A., Swain, S. S., KR, A., **Chowdhury, M**., ... & Elwakeel, A. E. (2024). Development and evaluation of a sensor enabled smart herbicide applicator for inter row crops. *Smart Agricultural Technology*, *9*, 100649.
- Madhusudan, B. S., Kushwaha, H. L., Kumar, A., Parray, R. A., Swain, S. S., **Chowdhury, M**., ... & Mattar, M. A. (2024). Critical assessment of furrow openers and operational parameters for optimum performance under conservation tillage. *Scientific Reports*, *14*(1), 20928.
- Guddaraddi, A., Singh, A., Amrutha, G., Saikanth, D. R. K., Kurmi, R., Singh, G., **Chowdhury, M**., & Singh, B. V. (2023). Sustainable biofuel production from agricultural residues an eco-friendly approach: a review. *International Journal of Environment and Climate Change*, 13, 2905-2914.

- Kumari, A., Ashoka, P., Tiwari, P., Sachan, P., Malla, A. K., Tripathy, A., & **Chowdhury, M**. (2023). Zero tillage lead to enhanced productivity and soil health. *International Journal of Environment and Climate Change*, 13, 3707-3715.
- Gawande, V., Saikanth, D. R. K., Sumithra, B. S., Aravind, S. A., Swamy, G. N., **Chowdhury, M**., & Singh, B. V. (2023). Potential of precision farming technologies for eco-friendly agriculture. *International Journal of Plant & Soil Science*, 35, 101-112.
- Kushwah, A., Chouriya, A., Tewari, V.K., Gupta, C., **Chowdhury, M**., Shrivastava, P., & Bhagat, P. (2024). A novel embedded system for tractor implement performance mapping. *Cogent Engineering*, 11, 2311093.
- Kurmi, R., Lande, S. D., Kurmi, J., **Chowdhury, M**., Singh, C., & Kumar, P. (2023). Comparative study on carbon footprint assessment of rice-wheat production system. *International Journal of Environment and Climate Change*, 13, 390-398.
- Bhagat, P., Kushwah, A., Yadav, R., Nag, R. H., **Chowdhury, M**., Carpenter, G., & Anand, R. (2023). SunSync Innovation: Empowering Traditional Solar Flat Plate Collectors with Autonomous Sun-Tracking for Tea Leaf Drying. *International Journal of Environment and Climate Change*, 13, 2162-2171.
- Kushwah, A., Sharma, P. K., Kushwaha, H. L., Nag, R. H., Carpenter, G., Choudhary, M. K., **Chowdhury, M**., Pandey, A., & Chaudhary, S. (2024). Economic Evaluation of Precise Intelligent Cauliflower Harvester: A Comparative Study with Manual Harvesting. *Journal of Scientific Research and Reports*, *30*(1), 33-42.
- Kushwah, A., Sharma, P. K., Kushwaha, H. L., Sharma, B. B., Carpenter, G., Nag, R. H., Yadav, R., & **Chowdhury, M**. (2023). Innovative selective harvesting technology for cauliflower: A design approach using plant characteristics. *Environment and Ecology*, *41*(4B), 2595-601.
- **Chowdhury, M**., & Kushwah, A. (2022). Tractor Wheel Slip Measurement and Optimization. In Futuristic Trends in Agriculture Engineering & Food Sciences, Vol. 2, pp. 260–269, IIP Proceedings, ISBN: 978-93-95632-65-2.
- Jha, A., **Chowdhury, M***., & Satpute, A. N. (2023). Surface water quality forecasting using machine learning approach. In C. B. Pande, M. Kumar, & N. L. Kushwaha (Eds.), Surface and groundwater resources development and management in semi-arid region (pp. 293–315). Springer International Publishing.
- Kushwah, A., & **Chowdhury, M**. (2022). Scope of nanotechnology in agricultural engineering. In Futuristic Trends in Agriculture Engineering & Food Sciences, Vol. 2, pp. 270–285, IIP Proceedings, ISBN: 978-93-95632-65-2.
- **Chowdhury, M**., and Jha, A. (2022). IoT Based Crop Residue Management. Agriculture & Food E-newsletter (E-ISSN: 2581-8317)
- **Chowdhury, M**., and Anand, R. (2023). Automated Pest and Disease Identification in Agriculture using Image Processing. Agriculture & Food E-newsletter (E-ISSN: 2581-8317).
- **Chowdhury, M**., 2023. Smart Sensing Technologies for Crop Health Monitoring and Disease Detection. Agriculture & Food E-newsletter (E-ISSN: 2581-8317).

- **Chowdhury, M**., Kurmi, R., and Anand, R., 2023. Artificial Neural Network (ANN) Based Tractor Performance Prediction. Agriculture & Food E-newsletter (E-ISSN: 2581-8317).
- **Chowdhury, M**., Kushwah, A., and Kumar, P., 2023. Precision Spraying: Enhancing Crop Protection and Environmental Sustainability. Agriculture & Food E-newsletter (E-ISSN: 2581-8317).
- **Chowdhury, M**., and Anand, R., 2023. AI-Driven Agricultural Robotics: Advancements and Applications. Agriculture & Food E-newsletter (E-ISSN: 2581-8317).

## Edited Books

- **Chowdhury, M**., Kushwaha, N. L., and Bhowmick, G. D. (Eds.). (2025). **Smart Farming, Smarter Solutions: Revolutionizing Agriculture with Artificial Intelligence** (1st ed.). **CRC Press.** Taylor & Francis Group, 2385 NW Executive Center Drive, Suite 320, Boca Raton FL 33431. 1-276. https://doi.org/10.1201/9781003536932
- Shah, M. P., **Chowdhury, M.,** and Ayushi, J. (Eds.) (2025). **Bioenergy: Sustainable Solution for a Greener Planet** (1st ed.). American Chemical Society (ACS), USA, Volume 1519, 1-290. https://doi.org/10.1021/bk-2025-1519

## Awards and Achievements

- Secured **AIR 107** in GATE in 2018.
- Secured **AIR 30** in AICE-JRF/SRF examination in 2020.
- Received **ICAR JRF/SRF Fellowship** during Ph.D. Programme.
- **FAI Award (Gold Medal + Citation + Cash Prize of Rs. 1,00,000) for Outstanding Doctoral Research in Fertilizer Usage** in 2025
- **ISAE Best Ph.D. Thesis Award** in 2025
- Received **Young Researcher Award** in international conference in 2023.
- Received **Dr. K. N. Synghal Memorial Gold Medal** for Outstanding Performance in Ph.D. in the occasion of 63rd Convocation of ICAR-IARI, New Delhi.
- Received **Best Poster Award** in international conference in 2023.
- Received **Best Oral Presentation Award** in national conference in 2024.
- **Gold medal** in table tennis (doubles) in 2018 in university competition, UBKV, Cochbehar (W.B).
- **Silver medal** in table tennis (single) in 2018 in university competition, UBKV, Cochbehar (W.B).

## Certifications

- **Offline workshop on "Hands-on Training on High-End Scientific Equipment usage towards Design, Development and Testing of Agricultural Machinery with an Industrial Approach"**
  Successfully completed one-week offline workshop Programme organized by SERB-New Delhi, CSIR-Central Mechanical Engineering Research Institute, West Bengal, during July 22-28, 2022.
- **Offline training cum workshop on "Airborne Hyperspectral Remote Sensing for Agriculture"**
  Successfully completed 10 days offline training programme organized by the NAHEP-CAAST, Division of Agricultural Physics, ICAR-Indian Agricultural Research Institute, New Delhi during January 16-25, 2023.
- **Offline training on "Artificial Intelligence and Machine Learning in Agriculture using Python"**
  Successfully completed one-week online training programme organized by the NAHEP-CAAST, ICAR-Indian Agricultural Statistics Research Institute, New Delhi during 13th-17th February, 2023.
- **Offline 21 days winter school on "Robotics, Artificial Intelligence and Big data with Innovative cum Futuristic Engineering Interventions for Smart Agriculture"**

Successfully completed 21 days offline winter school programme organized by ICAR-CIAE, Bhopal during 28.02.2025-20.03.2025.

## Intellectual Property Rights

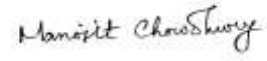
- A utility patent '**Handheld nitrogen assessment and prescription device and method thereof for cereal crops**' has been filed and published (**Application No- 202411038851**).
- A design patent entitled '**Nitrogen Prescription Device for Cereal Crop**' has been registered (**Design No- 413096-001**).
- A copyright entitled '**Nitrogen assessment and prescription in rice wheat cropping system**' has been registered (**Registration Number: SW-19435/2024**).
- A copyright entitled '**Automatic Spray Pressure Control System for Hydraulic Nozzles**' has been registered (**Registration Number: SW-20231/2025**).
- A copyright entitled '**Embedded System Algorithm for Location Tracking and Displaying Real-Time Tractor Performance Parameters**' has been registered (**Registration Number: SW-20229/2025**).
- Commercialized my developed technology "**Pusa Nitrogen Prescription Device**" to W S Telematics Pvt. Ltd. For the period of 5 years (24.03.2025-25.03.2030)

## Membership

- Life Member of Indian Society of Agriculture Engineers (ISAE)

## Declaration

All the details mentioned above are true to the best of my knowledge and belief.



**MANOJIT CHOWDHURY**