

Bio-data



Dr. Sourav Garai

Assistant Professor (Agronomy)

School of Agriculture and Rural Development

Faculty centre for IRDM

Ramakrishna Mission Vivekananda Educational and Research Institute

Ramakrishna Mission Ashrama, Narendrapur, Kolkata-700103

Phone: +91 8900509245/+91 6295000623

E-mail: garai.sourav93@gmail.com/sourav.garai@gm.rkmvu.ac.in

Personal Information

Date of Birth : 2nd October, 1993
Father's Name : Mr. Bibhas Garai
Nationality : Indian
Permanent Address : Guskara, PO: Guskara, District: Purba Bardhaman,
Pin: 713128, West Bengal, India, West Bengal, India

Education

- 2017– Present** : **Ph. D.** in Agronomy at Bidhan Chandra Krishi Viswavidyalaya
- **Thesis topic:** Growth, yield and nutrient use efficiency of *rabi* maize (*Zea mays* L.) hybrids as influenced by crop establishment methods and neem coated urea.
- 2015 – 2017** : **M.Sc. (Ag) in Agronomy** from Bidhan Chandra Krishi Viswavidyalaya
- Secured 8.38 OGPA out of 10.0 (1st Class)
 - Major subjects: Agronomy; Minor subjects: Soil and water conservation, Agril. Statistics
 - **Thesis topic:** Performance of Potassium Schoenite as an emerging source of potassium for improving growth, yield and quality of potato
- 2011 – 2015** : **B.Sc. (Ag) Honours** from Visva-Bharati
- Secured 7.78 OGPA out of 10.0
 - Major subjects: Agriculture and allied subjects with specialization in Agronomy and Soil Science
- 2009 – 2011** : **Higher Secondary (XII Standard)** from West Bengal Council of Higher Secondary Education
- Secured 75.00% (First Division)
 - Subjects taken: Bengali, English, Mathematics, Physics, Chemistry, Biology
- 2007 – 2009** : **Madhyamik (X Standard)** from West Bengal Board of Secondary Education
- Secured 83.80% (First Division)
 - Subjects taken: Bengali, English, Mathematics, Physical Science, Life Science, History and Geography

Research Experience

- Worked as a Merit Scholar during Masters at Bidhan Chandra Krishi Viswavidyalaya from May 2015 to June 2017. The research topic was “Performance of Potassium Schoenite as an emerging source of potassium for improving growth, yield and quality of potato. Additionally, the effect of seaweed saps on various agronomic and horticultural crops was undertaken.
- Worked as a University Research Fellow during Ph.D. at Bidhan Chandra Krishi Viswavidyalaya. The research topic was “Growth, yield and nutrient use efficiency of *rabi* maize (*Zea mays* L.) hybrids as influenced by crop establishment methods and neem coated urea”. One of the major themes of the Ph.D. study was to identify the growth and yield potential of newly released maize hybrids under varied crop establishment methods and varied doses of NCU in new alluvial zone of India. I was mostly interested in understanding the biomass partitioning, nutrient (especially nitrogen) dynamics and fractionation, and rhizospheric interactions between plant and soil microbiome in the hybrid corn agro-ecosystem. Understanding the involvement of energies and environmental impacts from different farming activities during the research work were also another points of interest.

Achievement

Scholarships

- **Received University Research Scholarship** sponsored by Dept. of Higher Education, Government of West Bengal at PhD level.
- **Received Swami Vivekananda MCM Scholarship** sponsored by Dept. of Higher Education, Government of West Bengal at Master’s level
- **Received Swami Vivekananda MCM Scholarship** sponsored by Dept. of Higher Education, Government of West Bengal at Graduate level
- **Received Chief Minister’s Scholarship** sponsored by Government of West Bengal at Secondary level.

Awards and Recognitions

- 2019 : **Received Best Poster Award** from State Agricultural Management and Extension Training Institute, West Bengal.
- 2017 : **Qualified National Eligibility Test (NET) in Agronomy** conducted by Agricultural Scientist Requirement Board (ASRB), New Delhi.
- 2017 : **Secured 2nd rank in All India Ph. D. Entrance Test (Agronomy)** organized by Bidhan Chandra Krishi Viswavidyalaya.
- 2015 **Qualified ICAR-AIEEA-PG.**

Publications

Research Articles in peer-reviewed journals

- Garai, S., Brahmachari, K., Sarkar, S., Mondal, M., Banerjee, H., Nanda, M.K. and Chakravarty, K. 2021. Impact of seaweed sap foliar application on growth, yield, and tuber quality of potato (*Solanum tuberosum* L.). J. Appl. Phycol. <https://doi.org/10.1007/s10811-021-02386-3> (NAAS- 9.02; IF- 3.215).
- Garai, S., Bhattacharjee, C., Sarkar, S., Moulick, D., Dey, S., Jana, S., ... & Hossain, A. (2024). Microplastics in the soil–water–food nexus: Inclusive insight into global research findings. *Science of The Total Environment*, 173891. (IF- 8.2).
- Garai, S., Brahmachari, K., Sarkar, S., Kundu, R., Pal, M. and Pramanick, B. 2019. Crop Growth and Productivity of Rainy Maize-garden Pea Copping Sequence as Influenced by Kappaphycus and Gracilaria Saps at Alluvial Soil of West Bengal, India. Curr. J. Appl. Sci. Technol. 36(2): 1–11. <https://doi.org/10.9734/cjast/2019/v36i230227>. (NAAS- 5.32).
- Sarkar, S., Ray, K., Garai, S., Banerjee, H., Haldar, K. and Nayak, J., 2023. Modelling nitrogen management in hybrid rice for coastal ecosystem of West Bengal, India. PeerJ 11: p.e14903 (NAAS- 9.06; IF- 3.06).
- Banerjee H, Sarkar S, Dutta SK, Garai S, Ray K, Zingore S, Goswami R, Majumdar K. 2022. Nitrogen management trade-offs in hybrid rice for agronomy, carbon, and energy efficiency. *Nutrient Cycling in Agroecosystems* 123:5-18 (NAAS- 9.87; IF- 3.86).
- Hossain, A., Skalicky, M., Brestic, M., Maitra, S., Sarkar, S., Ahmad, Z., Vemuri, H., Garai, S., Mondal, M., Bhatt, R., Kumar, P., Banerjee, P., Saha, S., Islam, T. and Laing, A.M. 2021. Selenium Biofortification: Roles, Mechanisms, Responses and Prospects. *Molecules* 26: 881. <https://doi.org/10.3390/molecules26040881> (NAAS- 9.27; IF- 4.411)
- Mondal, M., Biswas, B., Garai, S., Sarkar, S., Banerjee, H., Brahmachari, K., Bandyopadhyay, P.K., Maitra, S., Brestic, M., Skalicky, M., Ondrisik, P. and Hossain, A. 2021. Zeolites Enhance Soil Health, Crop Productivity and Environmental Safety. *Agronomy* 11, 448. <https://doi.org/10.3390/agronomy11030448> (NAAS- 8.60; IF- 3.417).
- Mondal, M.; Biswas, B.; Garai, S.; Adhikary, S.; Bandyopadhyay, P.K.; Sarkar, S.; Banerjee, H.; Brahmachari, K.; Maitra, S.; Mandal, T.K.; et al. Raising Climate-Resilient Embolden Rice (*Oryza sativa* L.) Seedlings during the Cool Season through Various Types of Nursery Bed Management. *Sustainability* 2021, 13, 12910. <https://doi.org/10.3390/su132212910> (NAAS- 8.58; IF- 3.251)
- Rana, L., Banerjee, H., Mazumdar, D., Ray, K., Sarkar, S., Garai, S. and Nayak, J. (2021). Response of maize (*Zea mays*) hybrids to spatio-temporal variation in planting. *Indian J Agron* 65(3): 290-296. (NAAS- 5.55)
- Rana, L., Banerjee, H., Mazumdar, D., Sarkar, S., Ray, K., Garai, S., Nayak, J. and Kumar, M. (2021). Determination of Principal Yield Attributing Traits of Hybrid Maize (*Zea mays* L.) Using Multivariate Analysis. *International Journal of Bio-resource and Stress Management* 12(5):594-602. (NAAS- 5.11)
- Sarkar, S., Skalicky, M., Hossain, A., Brestic, M., Saha, S., Garai S, Ray, K. and Brahmachari,

- K. 2020. Management of Crop Residues for Improving Input Use Efficiency and Agricultural Sustainability. *Sustainability* 12: 9808. <https://doi.org/10.3390/su12239808> (NAAS- 8.58; IF- 3.251)
- Mondal, M., Skalicky, M., Garai, S., Hossain, A., Sarkar, S., Banerjee, H., Kundu, R., Brestic, M., Barutcular, C., Erman, M., Sabagh, A.E.L. and Laing, A.M. 2020a. Supplementing Nitrogen in Combination with Rhizobium Inoculation and Soil Mulch in Peanut (*Arachis hypogaea* L.) Production System: Part I. Effects on Productivity, Soil Moisture, and Nutrient Dynamics. *Agronomy* 10:1582; <https://doi.org/10.3390/agronomy10101582> (NAAS- 8.60; IF- 3.417)
- Mondal, M., Skalicky, M., Garai, S., Hossain, A., Sarkar, S., Banerjee, H., Kundu, R., Brestic, M., Barutcular, C., Erman, M., Sabagh, A.E.L. and Laing, A.M. 2020b. Supplementing Nitrogen in Combination with Rhizobium Inoculation and Soil Mulch in Peanut (*Arachis hypogaea* L.) Production System : Part II. Effect on Phenology, Growth, Yield Attributes, Pod Quality, Profitability and Nitrogen Use Efficiency. *Agronomy*, 10:1513. <https://doi.org/3390/agronomy10101513> (NAAS- 8.60; IF- 3.417)
- Mondal, M., Garai, S., Banerjee, H. and Sarkar, S. 2020c. Mulching and nitrogen management in peanut cultivation: an evaluation of productivity, energy trade-off, carbon footprint and profitability. *Energy. Ecol. Environ.* <https://doi.org/10.1007/s40974-020-00189-9>
- Biswas, B., Timsina, J., Garai, S., Mondal, M., Banerjee, H., Adhikary, S. and Kanthal, S. 2020. Weed control in transplanted rice with post-emergence herbicides and their effects on subsequent rapeseed in Eastern India. *Int. J. Pest Manag.* <https://doi.org/10.1080/09670874.2020.1853276> (NAAS- 7.09; IF- 1.907)
- Kundu, R., Mondal, R., Garai, S., Mondal, M., Poddar, R. and Banerjee, S. 2020a. Weed management efficiency of post emergence herbicides in direct seeded rice and their residuality on soil microorganisms. *J. Exp. Biol. Agric. Sci.* 8(3): 276–286. [http://dx.doi.org/10.18006/2020.8\(3\).276.286](http://dx.doi.org/10.18006/2020.8(3).276.286) (NAAS- 5.07)
- Kundu, R., Mondal, M., Garai, S., Banerjee, H., Ghosh, D., Majumdar, A. and Poddar, R. 2020b. Efficacy of herbicides on weed control rhizospheric micro-organisms , soil properties and leaf qualities in tea plantation. *Indian J. Weed Sci.* 52:160–168. <https://doi.org/10.5958/0974-8164.2020.00029.5> (NAAS- 5.84)
- Kundu, R., Mondal, M., Garai, S., Mondal, R. and Poddar, R 2020c. Bio-efficacy of post emergence herbicides in boro rice nursery as well as main field and their residual effects on non-target microorganisms. *Oryza*, 57(3): 199-210. (NAAS- 5.03)
- Kundu, R., Mondal, M., Garai, S., Poddar, R. and Banerjee, S. 2020d. Efficacy of Herbicides against Broad-spectrum Weed Floras and Their Effect on Non-target Soil Microorganisms and Productivity in Sugarcane (*Saccharum* sp.). *Curr. J. Appl. Sci. Technol.* 39(2): 23-32. <https://doi.org/10.9734/CJAST/2020/v39i230493> (NAAS- 5.32)
- Banerjee, H., Garai, S., Sarkar, S., Ghosh, D., Samanta, S. and Mahato, M. 2019. Efficacy of herbicides against canary grass and wild oat in wheat and their residual effects on succeeding greengram in coastal Bengal. *Indian J. Weed Sci.* 51: 246.

<https://doi.org/10.5958/0974-8164.2019.00052.2>. (NAAS- 5.84)

Banerjee, H., Samanta, S., Dutta, A., Sarkar, S. and Garai, S. 2018. Selection of Rapeseed-mustard Varieties in Coastal Region of West Bengal : A Way Forward to Rice-fallow Intensification. *J. Indian Soc. Coast. Agric. Res.* 36: 54–63. (NAAS- 5.17)

Banerjee, H., Samanta, S., Sarkar, S., Garai, S., Pal, S. and Brahmachari, K. 2018. Growth , Productivity and Nutrient Uptake of Different Rice Cultivars under Coastal Eco-System of West Bengal. *J. Indian Soc. Coast. Agric. Res.* 36, 115–121. (NAAS- 5.17)

Ghosh, D., Sarkar, S., Brahmachari, K., Garai, S., Pal, M. and Sharma, A. 2017. Potassium Schoenite: an Emerging Source of Potassium for Improving Growth, Yield and Quality of Potato. *J. Exp. Biol. Agric. Sci.* 5: 173–182. [https://doi.org/10.18006/2017.5\(2\).173.182](https://doi.org/10.18006/2017.5(2).173.182). (NAAS- 5.17)

Book Chapters

Garai, S., Mondal, M. and Mukherjee, S. 2020. Smart Practices and Adaptive Technologies for Climate Resilient Agriculture. In. *Advanced Agriculture*; Maitra, S. and Pramanick, B. (eds.). New Delhi Publishers, Kolkata.

Garai, S., Mondal, M., Nayak, J., Sarkar, S., Banerjee, H., Brahmachari, K., Hossain, A. 2021. Input Use Efficiency for Improving Soil Fertility and Productivity. In: Bhatt R., Meena R.S., Hossain A. (eds) *Input Use Efficiency for Food and Environmental Security*. Springer, Singapore. https://doi.org/10.1007/978-981-16-5199-1_10

Hossain, A., Sarkar, S., Barman, M., Garai, S., Bhatt, R., Islam, M.T. and Meena, R.S. 2021a. Natural Resources Intensification and Footprints Management for Sustainable Food System. In. *Agroecological Footprints Management for Sustainable Food System*; Banerjee A., Meena R.S., Jhariya M.K., Yadav D.K. (eds). Springer, Singapore. https://doi.org/10.1007/978-981-15-9496-0_2

Hossain, A., Sarkar, S., Rahman, A., Bhatt, R., Garai, S., Saha, S., Islam, T. and Meena, R.S. 2021b. Ecological Intensification for Sustainable Agriculture in South Asia. In. *Ecological Intensification of Natural Resources for Sustainable Agriculture*; Jhariya M.K., Meena R.S., Banerjee A. (eds). Springer, Singapore. https://doi.org/10.1007/978-981-33-4203-3_6

Hossain, A., Raza, A., Maitra, S., Asaduzzaman, Md., Islam, R., Hossain, J., Sabagh, A.E.L., Garai, S., Mondal, M., Latef, A.A.H.A. and Aftab, T. 2021c. Strigolactones: A Novel Carotenoid-Derived Phytohormone – Biosynthesis, Transporters, Signalling, and Mechanisms in Abiotic Stress. In. *Plant Growth Regulators*; Aftab T., Hakeem K.R. (eds). Springer, Cham. https://doi.org/10.1007/978-3-030-61153-8_13

Mondal, M., Garai, S., Nayak J., Roy, A., Dutta, D., Karmakar S., Fahad, S., Hossain, A. (2021). Role of Gibberellins in Response to Stress Adaptation in Plants. In. *Plant Growth Regulators for Climate-Smart Agriculture*; Fahad, S., Sönmez, O., Turan, V., Adnan, M., Saud, S., Wu, C. and Wang D. (eds.). CRC press, Taylor and Francis Group, New work.

Hossain, A., Garai, S., Mondal, M. and Latef, A.A.H.A 2021d. The Key Roles of Proline Against Heat, Drought and Salinity-Induced Oxidative Stress in Wheat. In. *Organic Solutes, Oxidative Stress, and Antioxidant Enzymes Under Abiotic Stresses*, Latef, A.A.H.A (ed.). CRC press, Taylor and Francis Group, New work.

Hossain, A., Ahmad, Z., Moulik, D., Maitra, S., Bhadra, P., Ahmad, A., Garai, S., Mondal, M., Roy, A., Sabagh, A.E. and Aftab, T. 2021e. Jasmonates and Salicylates: Mechanisms, Transport and Signalling During Abiotic Stress in Plants. In. *Jasmonates and Salicylates Signaling in Plants*, T. Aftab and M. Yusuf (eds.). Springer Nature, Switzerland.

Mondal, M., Garai, S. and Banerjee H. 2020. Smart Practices and Adaptive Technologies for Climate Resilient Agriculture. In. *Advanced Agriculture*; Maitra, S. and Pramanick, B. (eds.). New Delhi Publishers, Kolkata.

Banerjee, H., Sarkar, S., Ray, K., Rana, L. and Garai, S. 2019. Processing Quality and Value Addition in Potato. In. *Recent Trends & Advances in Food Science & Post Harvest Technology*; Chakraborty, I., Ilahy, R., Vikram, B., Sujaysree, O.J. and Mani, A. (eds.) Satish Serial Publishing House, New Delhi.

Paper/extended summery/Abstract published in conference

- Garai, S., Mondal, M., Gunri, S.K., Banerjee, H., Sarkar, S. and Kundu, R. 2019. Precision nitrogen management under polythene mulching can lead to energy-efficient, eco-friendly and profitable peanut production system, November 15-16 at SAMETI, Narendrapur, Kolkata, West Bengal. (Abstract no. - T-III/27/AEFS 2019).
- Garai, S., Brahmachari, K., Kundu, R., Sarkar, S. and Ghosh, M. 2018. Crop growth and productivity under kharif maize-garden pea copping sequence as influenced by seaweed sap application, January 12-13 at FACC, B.C.K.V., Kalyani, West Bengal. (Abstract no. FIC-153).

Popular Articles

Mondal, M. and Garai, S. 2019. Climate-resilient and water efficient summer rice production system at new alluvial zone of West Bengal. Agriculture and Food- e newsletter. 41-47. <https://doi.org/10.13140/RG.2.2.26973.67042>.

Banerjee H, Pal S, Garai S, Mondal M, Nayak J, Sana, M (2021) Effectiveness of Herbicides and Their Combinations in Direct Seeded Hybrid Rice (*Oryza sativa* L.) in Coastal Belt of West Bengal. *Krishi Udyan Darpan* 1(1): 15-18

Training / Seminar/ Workshops

Paper presented in International / National Symposiums

International

1. *Presenting paper at International conference on Agriculture and Allied sciences: The Productivity, Food security and Ecology*, FACC, B.C.K.V., Kalyani,

West Bengal on 13th-14thAugust, 2018. **Paper title:** Promising rapeseed mustard varieties suitable for late sowing under coastal eco-system.

National

1. **Presenting poster at National Seminar on “Agro-Chemical Inputes and its Extension Approaches towards Food-Security and Bio-Safety”** organized by SAMETI, Integrated Rural Development and Management Faculty Centre and Sasya Shyamala Krishi Vigyan Kendra, Ramakrishna Mission Vivekananda Educational and Research Institute, Narendrapur, West Bengal on 15th-16thNovember 2019. **Paper title:** Precision nitrogen management under polythene mulching can lead to energy-efficient, eco-friendly and profitable peanut production system,
2. **Presenting poster at National Agronomy Congress on “Redesigning Agronomy for Nature conservation and Economic Empowerment”** organized by Pantnagar Agronomy Society, Pantnagar on 20th-22thFebruary 2018. **Paper title:**Performance of Potassium Schoenite as an emerging source of potassium for improving growth, yield and quality of potato.
3. **Presenting poster at National Seminar on “Innovative Farming for Food and Livelihood Security in changing climate”** organized by Innovative Farming, Society for Advancement of Agricultural Innovation (SAAI) and AICRP on STCRC, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur on 12th-13th January 2018. **Paper title:** Crop Growth and Productivity of Rainy Maize-garden Pea Copping Sequence as Influenced by Seaweed sap application.
4. **Presenting poster at National Seminar on Role of Resource Management in agriculture in the Context of Food Security, Nutrition and Economy** organized by The Agriculture Society of india on 15th -17thDecember 2018. **Paper title:**Bio-efficacy of Pinoxaden 5.1% EC against Phalaris minor and Avena ludoviciana in wheat crop and its effect on succeeding greengram crop.
5. **Presenting poster at National Symposium on Sustainable Agriculture for Food Security and Better Environment.** Organized by Dept. of Agronomy. Bidhan Chandra Krishi Viswavidyalaya on 17th -18th December 2015. **Paper title:** Response of potato (*Solanum tuberosum* L.) to zinc fertilization in trans-Gangetic plains of West Bengal.

Training/workshop/congress participated

1. Attend Dissemination workshop on “**System Assured Rice Production**” organized by Shamayita Math and B.C.K.V.in Bankura, 14th -15thDecember 2017. Ranbahal, Amarkan, Bankura, West Bengal.

Webinar participated

1. One Week International Training Course on “**Conservation Agriculture Based Crop Management Technologies in Climate Smart Agriculture**” organized by Centre for Advanced Agricultural Science and Technology (CAAST) for Climate Smart

Agriculture and Water Management (CSAWM) under ICAR-NAHEP, 18th-22nd May, 2020.

Academic Membership

1. Member of **Indian Society of Weed Science**, ICAR-Directorate of Weed Research, Maharajpur, Jabalpur, India 482 004.
2. Member of **Indian Society of Agronomy**, Division of Agronomy, Indian Agricultural Research Institute, New Delhi, Delhi IN-110012.

Extra curriculum activities

- Secured **1st position** in Intra Dist. 'Extempore' competition conducted by WBBSE.
- Secured **2nd position** in Intra Dist. Youth Parliament 'Quiz' Competition Conducted by Govt. of W.B.
- Secured **2nd position** in Intra University Cultural Festival in the year of 2011 conducted by Visva-Bharati University.
- **Champion in Annual Athletic Meet** organized by Visva-Bharati University, 2015.
- Worked with **Red Cross Society** for different Social activities.
- Acted as a member of **NSS** and awarded with Certificate of Merit (2014).

Programming skills

- Efficient in statistical data analysis using STAR, OPSTAT, Genstat and Excel
- Excellent skills in MS Word, Excel and Power Point.
- Completed Diploma in Information Technology and Application (DITA) from BYCTC, Govt. of WB (GPA: 8.73/10, 2013).

Research Profiles

Research Gate

https://www.researchgate.net/profile/Sourav_Garai2

Google Scholar

<https://scholar.google.com/citations?hl=en&user=t6HvQa8AAAAI>

- **ORCID ID: 0000-0001-5823-078X**