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EDUCATION:

PGD (Post Graduated Diploma) in Remote Sensing & Geographic Information System, Center for Space Science and Technology Education in Asia and the Pacific, IIRS, India, June 2022.

CGPA: 8.13 (out of 10), Grade: A

Thesis Topic: Rice Crop Cultural Types Mapping in Bangladesh Using Synergistic SAR and Optical Data.

M.Sc. Farm Power and Machinery, 2013, Bangladesh Agricultural University, Mymensingh, Bangladesh.

CGPA: 3.414 (out of 4)

Thesis Topic: Hourly Heat Energy Storage in Solar Pond.

B.Sc. Agricultural Engineering, 2011. Bangladesh Agricultural University, Mymensingh, Bangladesh.

CGPA: 3.545 (out of 4)

Project Thesis Topic: Production of Activated carbon from Coconut Shell.

PROFESSIONAL EXPERIENCE

Senior Scientific Officer, January 2019- To Date, Irrigation & Water Management Division, Bangladesh Rice Research Institute (BRRI).

Responsibilities: As a scientist I have to plan, design, and conduct experiments and projects regarding agricultural water management, irrigation, and drainage issues. Identifying, investigating, and solving farm level water management problems and solution. Maintaining communication with the administrative and international collaborators and stakeholders. Publishing as scientific articles and reports. At present I am doing following activities in my division.

- Assessment of Surface and Groundwater Quality for Irrigation in Selected Locations of Bangladesh as principal Investigator.
- Reuse of Domestic Household Water for Crop Production at BRRI Farm, Gazipur as Principal Investigator.
- Study on Water-stress Tolerance for Different Rice Genotypes for BRRI as principal investigator.
- Development of suitable method for safe ground water recharge as Co-Investigator.
- Water Resources Assessment During Dry Season Crop Cultivation in Selected Polders of Coastal Region as principal Investigator.
- Determination of drought using forecasted rainfall and evapotranspiration as Co-Investigator.
- To mitigating drought by applying supplemental irrigation as Co-Investigator.
- To determine suitability of existing model for drought forecasting as Co-Investigator
- Determination of **Physical and Hydraulic Properties** of Different Soil Types as Co-Investigator.
- Development of Automated Alternate Wetting and During Irrigation System for Rice Production as Co-Investigator

- Evaluation of Available Groundwater Resources for Sustainable Crop Production in Selected Locations of Bangladesh as Co-Investigator
- Optimization of Water Use Efficiency Through Subirrigation and Mini-sprinkler Irrigation System in Fine (light) Textured Soils of Bangladesh as Co-Investigator.
- Irrigation Water Requirement and Rainfall Utilization for Delayed Transplanting of Boro Rice in Different Locations of Bangladesh as Co-Investigator.
- Determining Minimum Irrigation Water Requirement of Rice at Different Regions of Bangladesh through Water Balance from On-Farm Demand and Model Simulation as Co-Investigator.
- Real-time Monitoring System for Salt Dynamics in Different Textured Soils by Using Internet-of-Things (IoT) as Co-Investigator.
- Saline Water Irrigation Strategies for Boro Rice Cultivation in The Coastal Saline Area as Co-Investigator.
- Impact of Saline Water Irrigation and Rice Straw and Gypsum Amendment on Soil Physicochemical Properties and Rice Yield in The Coastal Saline Area as Co-Investigator.

Scientific Officer, July 2013-January 2019, Irrigation & Water Management Division, Bangladesh Rice Research Institute (BRRI). I have done following activities.

- Rain water harvesting from roof top of BRRI campus, Gazipur as principal Investigator.
- Maximum Utilization of Rainwater in Potato- T. Aus- T. Aman Cropping Pattern as principal Investigator.
- Delineation of areas having water shortage during Boro rice cultivation in Northwest Bangladesh as Co-Investigator.
- Conjunctive use of wastewater and freshwater for irrigation in Boro rice cultivation as Co- Investigator.
- Effectiveness of solar pump for irrigated rice as Co- Investigator.
- Waste water irrigation for crop production as Co- Investigator.
- Assessing On-farm Water-use Efficiency of BRRI Research Farm, Gazipur as Co-Investigator.
- Monitoring Groundwater Level Fluctuation and Safe Utilization of Groundwater in Different Geo-Hydrological Regions as Co-Investigator.
- Change in Surface Water Bodies and Its Impact on Groundwater Recharge in Barind Region of Bangladesh as Co-Investigator.

Research Assistant: Soil and Water department, Indian Institute of Remote Sensing, Dehradun, India, 2022, PGD- Thesis work.

Research Assistant: Bangladesh Agricultural University, Mymensingh. 2011 to 2013. Masters' Thesis Work.

Research Assistant: Bangladesh Agricultural University, Mymensingh. 2010-2011. B.Sc. Project Thesis Work

PUBLICATIONS

Research Articles:

1. Hossain, M., Islam, M., Roy, D., Mahmud, M.N.H., Paul, P.L.C., **Yesmin, M.**, Kundu, P.K., Karim, N.N., Kader, M. and Kabir, M., 2022. Cropping System Intensification: An Approach to Increase Yield, Water Productivity, and Profitability in North-West Bangladesh. *International Journal of Agronomy*. <https://doi.org/10.1155/2022/6288494>
2. **Yesmin, M. S.**, Hossain, M. B., Roy, D., Mahmud, M. N. H., Paul, P. L. C., Kundu, P. K., & Islam, M. T. (2021). Optimization of Irrigation Water to Maximize Transplanted Aman Rice Production in Selected Areas of Bangladesh. *Bangladesh Rice Journal*, 25(2), 11-20. <https://doi.org/10.3329/brj.v25i2.62703>
3. Kundu, P. K., Paul, P. L. C., Hossain, M. B., Roy, D., Mahmud, M. N. H., **Yesmin, M. S.**, & Islam, M. T. (2021). Low-Cost Solar Pump Irrigation System for Irrigated Rice Production. *Bangladesh Rice Journal*, 25(2),1-10. <https://doi.org/10.3329/brj.v25i2.62702>

4. Paul, P. L. C., Roy, D., Mahmud, M. N. H., Hossain, M. B., **Yesmin, M. S.**, Kundu, P. K., & Islam, M. T. (2021). Rice-based Cropping System Intensification in the Coastal Saline area of Bangladesh: Problems and Prospects. *Bangladesh Rice Journal*, 25(2), 31-43. <https://doi.org/10.3329/brj.v25i2.62705>
5. Hossain, M. B., Roy, D., Mahmud, M. N. H., Paul, P. L. C., **Yesmin, M. S.**, & Kundu, P. K. (2021). Early transplanting of rainfed rice minimizes irrigation demand by utilizing rainfall. *Environmental Systems Research*, 10(1), 1-11. <https://doi.org/10.1186/s40068-021-00239-z>.
6. Islam, M. T., Hossain, M. B., Roy, D., Mahmud, M. N. H., Paul, P. L. C., **Yesmin, M. S.**, & Kundu, P. K. (2021). Behaviour of Groundwater Table with Rainfall in North-West Region of Bangladesh. *Bangladesh Rice Journal*, 25(2), 85-95. <https://doi.org/10.3329/brj.v25i2.62710>
7. Roy, D., Mahmud, M. N. H., Paul, P. L. C., Hossain, M. B., **Yesmin, M. S.**, Kundu, P. K., ... & Islam, M. T. (2021). Paddy Field Water Movement Through Soil Profiles Under Different Water Management Practices: A HYDRUS 1D Model Study. *Bangladesh Rice Journal*, 25(2), 57-67. <https://doi.org/10.3329/brj.v25i2.62707>
8. Mahmud, M. N. H., Roy, D., Paul, P. L. C., Hossain, M. B., **Yesmin, M. S.**, Kundu, P. K., & Islam, M. T. (2021). Natural Groundwater Recharge: A Review on the Estimation Methods. *Bangladesh Rice Journal*, 25(2), 45-56. <https://doi.org/10.3329/brj.v25i2.62706>
9. Hossain, M. B., Roy, D., Mahmud, M. N. H., Paul, P. L. C., **Yesmin, M. S.**, Kundu, P. K., ... & Rim, A. A. (2021). Grain Yield and Water Productivity of Irrigated Rice Affected by Transplanting Dates in Bangladesh. *Bangladesh Rice Journal*, 25(2), 21-30. <https://doi.org/10.3329/brj.v25i2.62704>
10. **M. S. Yesmin**, M. Maniruzzaman, M. B. Hossain, D. S. Gaydon, A. B. M. Mostafizur, M. J. Kabir J. C. Biswas, M. Mainuddin and R. W. Bell. Selection of Suitable Sowing Window for Boro Rice in Coastal Regions of Bangladesh. *J. Indian Soc. Coastal Agric. Res.* 37(2): 134-143 (2019).
11. M. B. Hossain, M. Maniruzzaman, **M. S. Yesmin**, A. B. M. Mostafizur, P.K. Kundu, M. J. Kabir, J. C. Biswas and M. Mainuddin. Water and Soil Salinity Dynamics and Dry Season Crop Cultivation in Coastal Region of Bangladesh. *J. Indian Soc. Coastal Agric. Res.* 37(2):24-31(2019).
12. M. Maniruzzaman, M. J. Kabir, M. B. Hossain, **M.S. Yesmin**, A. B. M. Mostafizur, J. C. Biswas, M. A. Ali, M. Mainuddin and R. W. Bell. Adjustment in Wet Season Rice Planting for Cropping Intensification in Coastal Bangladesh. *J. Indian Soc. Coastal Agric. Res.* 37(2): 123-133 (2019).
13. M.B. Hossain1, **S. Yesmin**, M. Maniruzzaman and J.C. Biswas. Irrigation Scheduling of Rice (*Oryza sativa* L.) Using CROPWAT Model in the Western Region of Bangladesh. *A Scientific Journal of Krishi Foundation. The Agriculturists* 15(1): 19-27 (2017).
14. **Yesmin M.S.**, Nowrin F., Chowdhury A., Paul S. and Islam M.M. Performance evaluation of a solar pond. *Eco-friendly Agril. J.* 11(10):114-118.
15. Sultana N., Sultana I., Sultana S., **Yesmin M.S.** and Nowrin F. Effect of explant type on direct organogenesis of tomato (*Lycopersicon esculentum* Mill.). *Eco-friendly Agril. J.* 11(10):110-113.
16. **Yesmin M.S.**, Nowrin F., Chowdhury A. and Roy D. Dissemination of water management technologies for rice cultivation to ensure food security in changing climate situation. *Eco-friendly Agril. J.* 11(09):126-134.
17. Nowrin F., Yesmin M.S. and Sultana N. (2018) Entomopathogenic nematode: An effective bio control agent for insect. *Eco-friendly Agril. J.* 11(11):119-125.

Book and book chapter:

1. Debjit Roy, Mir Nurul Hasan Mahmud, Priya Lal Chandra Paul, Md. Belal Hossain, **Mst. Shetara Yesmin** and Palash Kumar Kundu. 2022. Combating Against Water Scarcity of Rice Cultivation in Bangladesh. *In book: Water Scarcity* (Editors: Saeid Eslamian, Prabal Barua and Faezeh Eslamian); Nova Science Publishers, Inc.

Proceedings, Abstracts and Oral Presentations:

1. Debjit Roy, **Mst. Shetara Yesmin**, Md. Belal Hossain, Mir Nurul Hasan Mahmud, Priya Lal Chandra Paul, Palash Kumar Kundu, Md. Rezoan Bin Hafiz Pranto. 2023. Water for Hill Agriculture in Bangladesh:

Exploration of Challenges and Opportunities. 9th International Conference On Water and Flood Management (ICWFM), October 14-16, Dhaka, Bangladesh

2. Paul, P.L.C., Roy, D., Mahmud, M.N.H., Hossain, M.B., **Yesmin, M.S.**, Kundu, P.K., Pranto, R.B.H. 2023. Polder scale saline water management for crop production in the south-west coastal region of Bangladesh. 11th International Perspective on Water Resources and the Environment (IPWE) Conference, January 4-6, Dhaka, Bangladesh
3. Maniruzzaman, M., Biswas, J.C., Hossain, M.B., Mainuddin, M., Roy, D., **Yesmin, M.S.**, Kundu, P.K., Haque, M.M., Naher, U.A., Rahman, M.M. 2023. Greenhouse gas emissions from irrigated agriculture in Bangladesh and its reduction. 11th International Perspective on Water Resources and the Environment (IPWE) Conference, January 4-6, Dhaka, Bangladesh
4. **Yesmin, M.S.**, D. Roy, M.N.H. Mahmud, P.L.C. Paul, M.B. Hossain, P.K. Kundu and M.R.B.H. Pranto. 2022. Identification and mapping of T. Aman rice in coastal region of Bangladesh using SAR data. 3rd Annual Paper Meet, AED, IEB, November 17-19, Gazipur, Bangladesh
5. Paul, P.L.C., D. Roy, M.N.H. Mahmud, M.B. Hossain, **M.S. Yesmin**, P.K. Kundu, M.R.B.H. Pranto, A. Debnath. 2022. Improved production package increases rice yield in the coastal zone of Bangladesh. 3rd Annual Paper Meet, AED, IEB, November 17-19, Gazipur, Bangladesh
6. Kundu, P.K., D. Roy, M.N.H. Mahmud, P.L.C. Paul, M.B. Hossain, **M.S. Yesmin**, M.R.B.H. Pranto, A. Debnath. M.M. Alam and M. Maniruzzaman. 2022. Dynamics of river water salinity in the tidal coastal Barishal region of Bangladesh. 3rd Annual Paper Meet, AED, IEB, November 17-19, Gazipur, Bangladesh

INTERNATIONAL SEMINAR AND WORKSHOP

- Challenging Research by Women in STEM. Celebrating 25th Anniversary of OWSD in Bangladesh. 10 November, 2018.

PROFESSIONAL TRAINING

International

1. Advances in Remote Sensing Techniques for Geological Applications. Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), **India** (2022).
2. Technology for Integrated Water Management, **Belgium** (2015).

National

- Statistical modeling with **Python**. (2023)
- **GIS and Remote Sensing** Application to Assess Suitable Surface Water Resources for Crop Production in the Coastal Region (2022).
- Advanced Research Data Management and Refresh of Scientific Report writing (2021).
- Excel Based Data Analysis for Early Career Scientists (2021).
- Climate Smart Agriculture (2021).
- Scientific Report Writing Training Course (2020).
- Concept and Practice of Integrated Water Resources management (2020).
- Service Process Simplification (SPS) (2020).
- Innovation in Public Service (2020).
- Decision Support System for agro-Technology Transfer(**DSSAT**) (2019).
- Eco-friendly plant Protection Technique (2019).
- Experimental Design and Data Analysis. (2019).
- Rice Physiological Development Through Trait Discovery Training course. (2019)
- Modern rice Production Training course (2017).
- Experimental Design and Data Analysis Training Course (2017).

- **Programming R** for Experimental Design and Data Analysis. (2016).
- Two Month Rice Production and Communication Training Course. (2016).
- Use of Farm Machinery and Efficient Irrigation System Management. (2014).
- Rice Production, Communication and office management Training Course 2014).
- Experimental Design, Layout and Statistical Analysis (2013)
- Advanced training on Drawing and Design Agricultural Equipment by AutoCAD (2013)
- Communicative English (2013)

TECHNICAL AND COMPUTER SKILLS:

- GIS software: QGIS Software, ArcGIS, SNAP preprocessing software, ENVI Classic, Google earth engine, ERDAS imagine.
- Statistical Analysis Software: R, Statistix 10.
- Programming software: Python
- Crop Modeling Software: CropWat, Crop Stat, DSSAT.

FUNDED PROJECTS:

I have worked in below mentioned multi-disciplinary projects in collaboration with national and international organizations.

- Working scientist in “Mitigating risk and scaling-out profitable cropping system intensification practices in the salt-affected coastal zones of the Ganges Delta”, Phase-II. Funded by ACIAR (Australian Centre for Integrated Agricultural Research). 2022- till now.
- Co-Investigator in “Up-scaling of Improved Water Management Practices for Sustainable Productivity in the Haor areas”. September, 2022- till now. Funded by Krishi Gobeshona Foundation [Trans: Agricultural Research Foundation] (KGF).
- Working scientist in “Cropping System Intensification in the Salt-Affected Coastal Zones of Bangladesh and West Bengal, India”. Phase-I. Funded by ACIAR (Australian Centre for Integrated Agricultural Research).2016-2022.
- Co-Investigator in “Groundwater Resources Management for Sustainable Crop Production in Northwest Hydrological Region of Bangladesh”. Funded by National Agricultural Technology Program- Phase II Project (NATP-2) [Trans: Agricultural Research Foundation] NATP-2.2019-2022.

GRANT EXPERIENCE

I got the **VLIR-UOS** scholarships for 3 months training (1 semester advanced master course) University of Antwerp and **University of Gent** in Belgium. 2015.

I got PGD scholarship for 9 months from **CSSTEAP, India** (2021-2022).

PROFESSIONAL ASSOCIATIONS

- The Institute of Engineers, Bangladesh (IEB).
- Bangladesh Rice Research Institute Scientist Association (BRRISA)
- The Organization for Women in Science for the Developing World (OWSD)