

### **Curriculum Vitae of M. Harun-or Rashid**

Principal Scientific Officer, Biotechnology Division  
Bangladesh Institute of Nuclear Agriculture (BINA)  
BAU Campus, Mymensingh-2202, Bangladesh  
Tel: +0088 091670601 (work)  
+0088 01716 626143 (cell)

E-mail :< harun@bina.gov.bd>; <mhrashid08@gmail.com>

**Name:** MD. HARUN-OR RASHID

**Nationality:** BANGLADESHI

**Date of Birth:** 22- 04 - 1971

#### **EDUCATION**

**Post doctoral research** (May, 2016 to December, 2016): Department of Plant Biotechnology, Institute of System Biology, UNIVERSITY KEBANGASAN MALAYSIA (UKM), Malaysia.

**Project:** Cloning and transformation of biotic stress induced genes in *Arabidopsis* and rice

**Doctor of Science** (May, 2009 to June, 2013): Department of Biology, Institute of Pharmacy and Molecular Biotechnology, HEIDELBERG UNIVERSITY, Germany.

**Thesis:** Genetic Diversity of Rhizobia Nodulating Lentil (*Lens culinaris*, Medik.)

**Master of Science** (1996 to 1998): Department of Soil Science, BANGLADESH AGRICULTURAL UNIVERSITY, Bangladesh.

**Thesis:** Effect of Cyanobacteria on Growth and Yield of Rice.

**Bachelor of Science** [1988 to 1992 (held at 1996)]: Faculty of Agriculture, BANGLADESH AGRICULTURAL UNIVERSITY, Bangladesh.

**Subjects:** Botany, Genetics, Bio-chemistry, Soil Science, Agronomy, Pathology, Entomology, Horticulture etc.

**Higher Secondary Certificate Examination** (1986 to 1988): Bangladesh Agricultural University College, Mymensingh.

**Subjects:** Physics, Chemistry, Biology, Language, Mathematics etc.

**Secondary Certificate Examination** (1986): Rupshi high school, Fulpur, Mymensingh.

**Subjects:** : Physics, Chemistry, Biology, Language, Mathematics etc.

#### **EMPLOYMENT RECORDS**

**Principal Scientific officer** (July 2019– to present), Biotechnology Division, Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202, Bangladesh.

**Senior Scientific officer** (September 2015 – to July 2019), Biotechnology Division, Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202, Bangladesh.

**Senior Scientific officer** (2013 – September 2015), Soil Science Division, Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202, Bangladesh.

**Scientific officer** (1999 - 2013), Soil Science Division, Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202, Bangladesh.

## **RESEARCH SKILLS / EXPERIENCES**

### **A. PLANT TISSUE CULTURE**

- Plant tissue and embryo culture
- Acclimatization of tissue culture generated plant at field conditions
- Use of plant tissue for genetic transformation
- 

### **B. MOLECULAR BIOLOGY**

- Gene isolation, cloning and construct development from prokaryotes and eukaryotes
- Gene amplification and sequencing from prokaryotes and eukaryotes
- C. Sequence analysis of different genes using different software for genetic interpretation
- Construction of genomic libraries from prokaryotes and eukaryotes
- Mutation Breeding using chemical mutagen and gamma irradiation for crop improvement
- High resolution PCR using P<sup>33</sup> isotope

### **C. PLANT CULTURES AND PLANT–MICROBE INTERACTION STUDY**

- Legumes and Rice cultivation and their management
- Isolation, purification, preservation and characterization of symbiotic, associative and free living bacteria from plant, soil and water
- Isolation, purification and preservation of cyanobacteria from soil
- General microscopy/light microscopy

## **TEACHING**

- Supervision MS and PhD student at national and international universities
- Evaluation of MS and PhD thesis
  
- Supervised MS students from the Biotechnology and Soil Science Division of Bangladesh Agricultural University
- Trained GO and NGO peoples for using bio-fertilizers (bacterial inoculum) for enhancing plant growth

## **ADMINISTRATIVE**

- Organized training for farmers, scientists and government officials
- Played key roles in establishing Molecular Biology Laboratory and plant tissue culture laboratory at Bangladesh Institute of Nuclear agriculture (BINA)
- Worked as resource person in several training programs organized for scientist and extension peoples
- Involved in staff management, recruitment and their promotional activities
- Involved in institutional service role and organogram updating

## **SOFTWARE FAMILIARITIES FOR BIOINFORMATICS ANALYSES**

Arlequin, BioEdit, ClonalFrame, DnaSP, FAMD, MEGA, Mr.BAYES, MAPPAD, SPLIT4, STRUCTURE.

## CURRENT RESEARCH

- Tissue culture and genetic transformation of different crops
- Gene cloning and over expression studies of stress induced genes
- Screening of rice mutants for higher yield and stress tolerance at field conditions developed by chemical mutagenesis and gamma irradiation
- Genetic diversity of rhizobia from different legumes
- Isolation and screening of bacterial strains for antifungal activities and heavy metal tolerance
- Evaluation of bacterial strains at field conditions to find superior strains for bio-fertilizer production for crop production.

## RESEARCH INTEREST

1. Plant tissue culture and genetic transformation
2. Gene cloning, transformation and over expression
3. Plant mutation breeding specially cereal crops
4. Microbial evaluation, diversity, taxonomy and adaptation study
5. Molecular mechanisms that can explain how plants-microbe interact
6. Use of bacterial strains for enhancing plant stress tolerance and yield

## AWARDS, FELLOWSHIPS AND RESEARCH FUNDING

- Best Agricultural scientist **Gold medal award-2016** from Krishibid Institute Bangladesh (KIB), Bangladesh.
- **European Union scholarship** (EMMA Scholarship) from September, 2009 to June, 2012 for PhD study at Heidelberg University, Germany.
- **IDB Research Fellowship** from the Bangladesh Institute of Nuclear Agriculture, Government of Bangladesh, July to November 2005, Molecular and gene cloning techniques in England (University of York and John Innes Centre). UK.
- **IAEA Research Fellowship** from the International Atomic Energy Agency (IAEA), September to December 1999, General Microbiology in Microbiology Division, Indian Agricultural Research Institute, India,
- **Special research allocation** from the Ministry of Science and Technology, Government of the people's republic of Bangladesh from July, 2014 to June, 2016.
- **DAAD-STIBET grants** from January, 2013 to May, 2013, Heidelberg University, Germany.

## PUBLICATIONS

### JOURNAL PUBLICATIONS

1. Khan,N.A.Uddin,M. I; Ghosh, J.K and **Rashid, M.H (2023)** Callus induction, regeneration of BRRI dhan 29 and determination of lethal dose of ethyl ethanesulfonate. BJNA, 37: 1-10. : <https://doi.org/10.3329/binag.v37i1.69707>
2. Salam, M.A., kamruzzaman, M; khan, N.A., Rouf, M.A; Haque, M.S and **Rashid, M.H (2023)** optimization of different factors for successful *in vitro* regeneration and fruiting of tomato. SAARC. J. Agric., 21: 89-101. DOI: <https://doi.org/10.3329/sja.v21i1.64229>
3. Sarker, R. R., **Rashid, M.H.**, Islam, M. A., Jahiruddin, M., Islam, K. R., & Jahangir, M. M. R. (2023). Tillage and Residue Management Impact on Microbial and Nematode Abundance Under Diverse Rice-Based Cropping Systems in Calcareous and Non-calcareous Floodplain Soils. *Journal of Soil Science and Plant Nutrition*, 1-14.
4. Yesmin,MM., **Rashid, M.H.**, Prosun,T.A., Khan,N.A., Haider,M.J., Shubroto Kumar Sarker and Swapan Kumar Paul (2022) Growth, yield and seed protein content of Faba bean (*Vicia faba*) subject to seed inoculation by its root nodulating rhizobial strains. *Research on Crops*, 23: 331-338.
5. Bhomik, I.C., Rashid,M.H., Paul,N.C., Yesmin,M.M., Saha,K.K., **Rashid, M.H.**, Paul., S.K.(2022) Application of rhizobia boosts the growth and yield of faba bean (*Vicia faba* L.) under field condition. *Fundamental and Applied Agriculture*. 7: 206–215, doi: [10.5455/faa.110106](https://doi.org/10.5455/faa.110106)
6. Sarker, M.R., **Rashid, M.H.**, Rahman, A., Kafi, M.A., Hosen, M.I., Rahman, M.S., Nuruzzaman Khan, M.N (2022) Recent advances in nanomaterials based sustainable agriculture: An overview. *Environmental Nanotechnology, Monitoring & Management*, 18: 100687.
7. Young,JPW., Moeskjær,S., AfoninA., Rahi,P., Maluk,M., James,E.K., Cavassim,I.B. **Rashid, MH.**, Aserse,A.A., Perry,B.J., Wang, E.T., et al (2021). Defining the *Rhizobium leguminosarum* Species Complex. *Genes*. 12: 111.
8. Somana,S.R., Saha,N.R., **Rashid, M.H.**, and Hauqe, M.S., (2021) analysis of genetic diversity of modern and indigenous potato (*Solanum tuberosum* L.) germplasm by rapd markers. *Plant Cell Biotechnology and Molecular Biology*. (11&12):143-155.
9. Khatun, M.K., Haque, M.A., MalekM.A, **Rashid, M.H**, Islam,S., & Haque,M.M., (2021) Genetic Diversity Analysis of Soybean [*Glycine max* (L.) Merrill.] Germplasms in Bangladesh Using SSR Markers. *Journal of Agricultural Science*.13, doi:10.5539/jas.v13n2p.
10. Yesmin,M.M., **Rashid, M.H.**, Prosun,T.A., Ali,M.Y. Haider,M.J., Paul, S.K. (2021) Isolation and Characterization of *Rhizobium* Strains from Root Nodules of Faba Bean (*Vicia faba* L.). *J Bangladesh Agril Univ* 19(3): 302–309., <https://doi.org/10.5455/JBAU>.
11. Khan,N.A., Uddin,M.I., Rana,M.S., Jahan,N.J., Sumi, M.A., and **Rashid, M.H** (2021) Callus Induction, Regeneration and Establishment of Rice Plant from Mature Embryo. *Journal of Advances in Biology & Biotechnology*. 24(9): 10-18, Article no.JABB.76855
12. **Rashid, M.H**, Rouf MA, Sarker RR, Khan, NA and Uddin MI (2020) Comparative performance of indigenous and exotic strain on growth and yield of lentil (*Lens culinaris*), Bangladesh *Journal of Nuclear Agriculture* (BJNA), 2020:

13. Prosun TA, Ali MY2, Yesmin MM, Brun MS, Khan MB and **Rashid, M.H** (2020) Identification and evaluation of arsenic tolerant bacteria for arsenic mitigation in contaminated soil. *J Bacteriol Mycol.* 2020; 7(8): 1156.
14. Alam MJ, Chowdhury MAH, Nahar Q, **Rashid, M.H** and Ahmed, KS (2020) Comparative efficacy of some insecticides against maize aphid (*Rhopalosiphum maidis*) and its influence on natural enemies in maize ecosystem. *Tropical Agrobiodiversity (TRAB)* 1: 95-101
15. Alam MJ, Nahar MK, Khatun MK, **Rashid, MH**, Ahmed, KS (2020) Impact assessment of different sowing dates on maize aphid (*Rhopalosiphum maidis*) infestation in Bangladesh. *Sustainability in Food and Agriculture (SFNA)* 1:87-94
16. Rahman MM, Bhuiyan MSH, Rouf MA, R.R. Sarker RR, **Rashid, M.H** (2020) Quality assessment of municipal solid waste compost. *Acta Chemica Malaysia (ACMY)*, 4: DOI: 10.2478/acmy-2020-0006
17. Khatun F, Rahman MM, Habib MA, Haque MS, **Rashid, M.H**, Saha S and Rahman A (2019) Genetic diversity analysis of some local biodiesel plant (*Jatropha curcas* L.) in Bangladesh. *J Bangladesh Agril Univ* 17: 437–445
18. Al-Noor MM, Quadir QF, Naher J, **Rashid, M.H**, Chakrobarty T, Jewel ZA, Razia S and Nath UK (2019) Inducing Variability in Rice for Enriched Iron and Zinc Content through In vitro Culture. *Plant Tissue Cult. & Biotech.* 29: 161-174
19. Hasan MM, Hasan MK, Khayer A and **Rashid, M.H** (2019) Inhibition of Protease Enzyme Activity of *Daphnia magna* from the *Cyanobacterium microcystis* Sp. Strain BM 25 Extracts. *Global Veterinaria* 21: 165-171
20. Ali SR, Rahman MH, Khatun S, Yasmin S and Md. **Rashid, M.H** (2019) Isolation, characterization and symbiotic performance evaluation of soybean (*Glycine max*) nodulating rhizobia from different districts of Bangladesh. *J Biosci Biotech Discovery.* 4:10-20
21. Rahman MH, Khatun S, Ali SR, Yasmin S, Kamruzzaman M and **Rashid, M.H.** (2018) Morpho-Physiological Diversity of Root Nodule Rhizobia from *Mimosa pudica* L) and Water Mimosa (*Neptunia oleracea* L). *J Bacteriol Mycol.* 5: 1061.
22. Braun, M.S., Zimmermann, S., Danner, M., **Rashid, M.H.**, and Wink, M. (2016) *Corynebacterium uropygialis* sp. nov., isolated from the preen gland of Turkeys (*Meleagris gallopavo*). *Syst. Appl. Microbiol*, Doi: 10.1016/j.syapm 2015.12.001
23. **Rashid, M.H.**, Young J.P.W., Overall, I., Clercx, P., Willems, A., Braun, M.S and Wink, W. (2015). Average nucleotide identity of genome sequences supports the description of *Rhizobium lentis* sp. nov., *Rhizobium bangladeshense* sp. nov. and *Rhizobium binae* sp. nov. from lentil (*Lens culinaris*) nodules. *Inter. J. Syst. Evol. Microbiol*, 65:3037-3045.
24. **Rashid, M.H.**, Gonzalez, H., Young, J.P.W., and Wink, M. (2014). *Rhizobium leguminosarum* is the symbiont of lentil in the Middle East and Europe but not in Bangladesh. *FEMS Microbiol Ecol*, 87: 64 -77.
25. **Rashid, M.H.**, Schafer, H., Gonzalez, H, and Wink, M. (2012). Genetic diversity of rhizobia nodulating lentil (*Lens culinaris*) in Bangladesh. *Syst. Appl. Microbiol*, 35:98-109.

26. **Rashid, M.H.**, Sattar, M.A., Uddin, M.I., and Young, J.P.W. (2009). Molecular characterization of symbiotic root nodulating rhizobia isolated from lentil (*Lens culinaris*). *Electronic Journal of Environmental, Agriculture and Food Chemistry*. 8: 602-612.
27. Fariullah, Irshad, M., Alam, A., Yamamoto, S., Uddin, M.I., Qasim, M., **Rashid, M.H.** and Ahmad, Z. (2009). Agronomic performances of different cucumber genotypes grown under plastic film as off-season cultivation in Northern areas of Pakistan. *Bangladesh J. Environ. Sci.* 17: 144-149.
28. Kabir, M.H., Sarkar, M.A.R., **Rashid, M.H.**, and Rahman, M.S. (2008). Effect of rhizobial inoculation on yield and yield attributing characters of summer mungbean cultivars. *Bangladesh J. Prog. Sci & Tech.* 6: 321-324.
29. Kabir, M.H., Chowdhury, A.K.M.S.H., **Rashid, M.H.**, Malaker, J.C., and Hassan, S.M.M. (2008). Effect of rhizobial inoculation on nodulation and growth of summer mungbean. *Bangladesh J. Environ. Sci.* 14: 129-133.
30. Saha, B.K., Chowdhury, M.A.H., and **Rashid, M.H.** (2008). Effect of rhizobia and host cultivar on some biochemical constituents and yield of lentil. *Int. J. BioRes.* 4:100-107.
31. **Rashid, M.H.**, Sattar., M.A., Uddin, M.I., and Young, J.P.W. (2007). Characterization of lentil rhizobia using BoxAi primer. *Mol. Biol.Biotechnol. J.* 5: 24-27.
32. Uddin, M.I., **Rashid, M.H.**, Khan, N., Perven, M.S.T.F., Tai, T.H., and .Tanaka, K. (2007). Selection of promising salt tolerant rice mutants derived from cultivar “drew” and their antioxidant enzymes activity under salt stress. *SABRAO J. Breed. Genet.* 39: 89-98.
33. Alam, M.J., Uddin, M. M., **Rashid, M.H.**, Begum, S.J., and Haque, M.M. (2006).Status of some industrial waste contaminants in Bangladesh. *Bangladesh J. Environ. Sci.* 12: 340-343.
34. **Rashid, M.H.**, Islam M. Z., and Chowdhury, S. (2002). Performance studies of some *Bradyrhizobium* isolates on growth and yield of mungbean (*Vigna radiata*). *Bangladesh J. Environ. Sci.* 8: 55-59.
35. Lovely, A.B., **Rashid, M.H.**, and Haque, M.M. (2002). Effects of cultivar and spacing on weed infestation and yield of transplant Aman rice. *Bangladesh J. Environ. Sci.* 8: 172-178.
34. Podder, A.K, **Rashid, M.H.**, and Hossain, M.B. (2001). Effect of Bradyrhizobial strain and nitrogenous fertilizer on groundnut production. *Bangladesh J. Microbial.* 18: 9-14.
36. **Rashid, M.H.**, Hashem, M.A., and Mian, M.H. (2000). Effect of B, Zn and Mo on indigenous cyanobacteria (bluegreen algae) and rice yield with BRRI dhan-29. *Bangladesh J. Environ. Sci.* 6: 102-105.
37. **Rashid, M.H.**, Hashem M.A., and Hossain, M.B. (2000). Effect of B, Zn and Mo on nutrient uptake by BRRI dhan-29. *Bangladesh J. Environ. Sci.* 6: 97-101.

## BOOK CHAPTER

1. **Rashid, M.H.**, Kamruzzaman M, Haque ANA, Krehenbrink M (2019) Soil Microbes for Sustainable Agriculture. *Sustainable Management of Soil and Environment* pp 339-382. Edited by Swaroop Meena RS, Kumar S, Bohra JS, Jat ML (2019). The Springer International Publishing, Singapore. DOI<https://doi.org/10.1007/978-981-13-8832-3>
2. **Rashid, M.H.**, Krehenbrink, M., and Akhtar, M.S. (2014) Nitrogen-Fixing Plant-Microbe Symbioses. In “Sustainable Agriculture Reviews”, pp. 193-234. Edited by Lichtfouse E. The Springer International Publishing, Switzerland. ISBN 978-3-319-09131-0; ISBN 978-3-319-09132-7 (eBook); DOI 10.1007/978-3-319-09132-7.

## BOOKLET

Podder, A.K., Islam, Z.A., **Rashid, M.H.**, Chowdhury, S., and Uddin N. (1999). Zibanosar- O-amader Krishi. Published under Pilot Project for Bio-fertilizer Production, BINA, Bangladesh.

## CONFERENCE PROCEEDING AND POSTERS

1. **Rashid, M.H.**, Sultana A, Begum HA, Uddin MI, Goswami BK (2018). Isolation and evaluation of bacterial strains with antifungal activity against the phytopathogenic fungi. In, World congress on “plant pathology and plant biotechnology conference”. Held in Dallas, USA. 24-25 September.
2. Rely, BK, **Rashid, M.H.**, Wink, M and Cook D.R (2017) Surveying the genetic and genomic diversity of lentil nodulating rhizobia. Plant and animal genome conference, held in San Diego, USA
3. Hossain, M. M., Uddin, M. I., Islam, M. A., Kader, M. A., Islam, N., **Rashid, M. H.**, Islam, M. M., Razaia, S. and Imran, S. (2017) Expression of *OsNHX1*, *OsNHX2* and *OsSOS1* transporters in salt tolerant Pokkali and salt sensitive BRRI dhan-29 rice induced by salinity rice. In, the 10<sup>th</sup> Biennial Conference 2017, Plant Breeding and Genetics Society of Bangladesh, Dhaka, Bangladesh, p 62.
4. Islam, M. A., Uddin, M. I., **Rashid, M.H.**, Hossain, M. M., and Imran, S. (2017) Expressional analysis novel stress tolerant genes *DREB*, *OsSAP* and *OsSalt* in rice induced by drought and submergence. . In, the 10<sup>th</sup> Biennial Conference 2017, Plant Breeding and Genetics Society of Bangladesh, Dhaka, Bangladesh, p 63.
5. Uddin, M. I., Islam, M. A., **Rashid, M.H.**, Hossain, M. M., and Imran, S. (2017) Expression of novel stress tolerant genes *OsARP*, *OsMGD* and *OsGGT* in rice induced by salinity and submergence. 10<sup>th</sup> Biennial Conference 2017, Plant Breeding and Genetics Society of Bangladesh, Dhaka, Bangladesh, pp. In, the 63-64.
6. Islam, M. A., Uddin, M. I., **Rashid, M.H.**, Hossain, M.M., and Imran, S. (2017) Expression of novel ion transporters *OsNHX1*, *OsNHX2* and *OsSOS1* in rice induced by salinity and drought stresses.. 10<sup>th</sup> Biennial Conference 2017, Plant Breeding and Genetics Society of Bangladesh, Dhaka, Bangladesh, p 64.
7. **Rashid, M.H.** and Sattar, M.A. (2008). Response of lentil cultivars to rhizobial inoculation and nitrogen fertilizer. Paper presented in 24th annual conference of Bangladesh society of microbiologist, held at 28th June, Dhaka, Bangladesh.
8. **Rashid, M.H.**, Sattar, M.A. and Young, JPW. (2007). REP-PCR fingerprint of lentil Rhizobia isolated from Bangladesh. In, 1st international Conference on “Promotion of Biotechnology: National and international perspective”. Dhaka, Bangladesh. 6-8<sup>th</sup> April. p. 106.
9. **Rashid, M.H.**, Sattar, M.A., Islam, M.R., and Young, J.P.W. (2007). Genotypic Characterization of Lentil (*Lens culinaris*) Rhizobia Isolated from Bangladesh, pp. 245-250. In, Proceeding of the International Symposium on Microbial Technologies for Sustainable Agriculture, Faisalabad, Pakistan.

## Popular Scientific Articles

1. Sattar, M.A and **Rashid, M.H.** (2004). Heavy metal toxicity in fertilizers: A Threat to Health and Environment. Life Science and Environment pages. The Bangladesh Observer, p-4.
2. **Rashid, M.H.** (2008). Mati Bachebe Zibano Shar, Khatkhamar Daily newspaper. The Prothom Alo. p. 15.

**3. M.H. Rashid** (2008). Zibano Sarer karjokaritar kusol. Krishi Biplob. A fortnightly National Newspaper. pp. 22-23.

#### **SCIENTIFIC VISIT TO**

- China
- USA
- Thailand
- Malaysia
- Switzerland

#### **MEMBER IN PROFESSIONAL AND SOCIAL SOCIETIES**

- Life Member, Bangladesh Microbiologist Society, Bangladesh.
- Life Member, Krishibid Institution, Bangladesh.
- Life member, Indian Society of Microbiologist, India.
- Indian Society for Nuclear Techniques in Agriculture and Biology.

#### **MEMBER IN JOURNAL EDITORIAL BOARD**

- Journal of bacteriology and Mycology
- Malaysian Journal of Halal Research

#### **REFEREES**

**Professor Dr. Michael Wink:** Was my supervisor for Ph.D. study at Heidelberg University. Department of Biology, Institute of Pharmacy and Molecular Biology (IPMB), Heidelberg University, Germany.  
Email: wink@uni-heidelberg.de

**Professor Dr. Zamri Zainal:** Was my postdoctoral research supervisor at UKM, Malaysia. Department of plant biotechnology, Institute of system biology, Kebangsaan Malaysia (UKM), Malaysia  
Email. zz@ukm.edu.my

**Dr. M.A. Satter :** Ex-director General, Bangladesh Institute of Nuclear Agriculture (BINA), Bangladesh  
cell:01791600112



Date: 24- 01- 2024

**Dr. M. Harun-or Rashid**