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Plant Breeding Division
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Areas of research focus : Over 20 years of experience in agricultural research for development (AR4D) in marginal environments. My research focus is on management of research projects on breeding and climate resilient varieties, physiology of abiotic stresses, product profile and seed systems; Genetic gain enhancement, and GWAS, trait mapping, Molecular Breeding. Degree and non-degree training. Supervised/cosupervised six MS and 4 Ph.D students; developed training course on breeding modernization, molecular breeding, Rice Production Technique and quality seed production being offered by the BRRI and IRRI

Gender : Male

Permanent Address : House No. 211 Dholadia
Mymensingh City
District: Mymensingh-2200
Bangladesh

Date of birth: : February 09, 1972

Nationality : Bangladeshi

Marital Status : Married (Two daughters)

Education

PhD in Genetics and Plant Breeding, Bangladesh Agricultural University (BAU), Mymensingh (Research work done at IRRI, Philippines from May 8, 2006-May 20, 2010)
MS in Genetics and Plant Breeding, BAU, 1999
B.Sc. in Agriculture, BAU, 1993

Professional Appointments

2025- Present: Chief Scientific Officer (Plant Breeding) and Head, BRRI Regional Station, Cumilla
2022- 2025: Principal Scientific Officer, Plant Breeding Div., BRRI HQ, Gazipur 1701
2018- 2022: Head, Bangladesh Rice Research institute (BRRI) Regional Station, Bhanga, Faridpur
2014-Present: Principal Scientific Officer -Plant Breeding, BRRI HQ, Gazipur 1701
2013-2015: Postdoctoral Fellow-Varietal Specialist, International Rice Research Institute (IRRI), Philippines
2010-2012: Senior Scientific Officer -Plant Breeding, BRRI HQ, Gazipur 1701
2006-2010: Ph.D. Research Scholar, IRRI Philippines
1999-2005: Scientific Officer -Plant Breeding, BRRI HQ, Gazipur 1701

Additional appointments

• Nov 2017-Till Date Adjunct Faculty, Bangladesh Agricultural University

- June 2014-Till Date Adjunct Faculty, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh
- Aug 2012- Till Date Adjunct Faculty, Gazipur Agricultural University, Salna, Gazipur, Bangladesh

Dissertation

PhD: Marker-assisted backcrossing of *Saltol*, discovery of additional quantitative trait loci and assessment of allelic variability in *Saltol* in rice germplasm (Research Advisor: Dr. Abdelbagi M. Ismail)

Awards and Honors

- IRRI-NARES Fellowship Award 2024 for valuable contribution to IRRI-NARES Breeding Network
- TRB-BRRI Project Annual Award 2018 and 2019: in recognition of their excellent contribution to TRB Project and Institute in accelerating the rate of genetic gain delivered to Bangladeshi Rice Growers (Worked as Team Leader)
- National Integrity Award 2024
- National Environmental Award in 2009 (Team Award), Bangladesh

Professional Training

International

Country	Year	Duration		Name of program
		Months	Days	
BRRI-HAAS** China	2001	3	5	Hybrid Rice Technology
IRRI Philippines	2002	-	15	Planning Rice Breeding for Impact
Nepal (organized by IRRI-PETRA)	2003	-	3	Research Management Training Workshop
IRRI Philippines	2005	-	7	Workshop cum training on Advances in Marker Assisted Selection
IRRI Philippines	2007	-	5	Basic Experimental Design and Data Analysis Course
IRRI Philippines	2007	-	3	Analysis of Mixed Models Using CropStat
IRRI Philippines	2007	-	5	Scientific Writing & Presentation Skills
IRRI Philippines	2008	-	5	Bioinformatics Workshop for Crop Researcher
IRRI-BRRI- CURE-IFAD	2012	-	1	Training on Methodologies in Data Collection and Analysis for Adoption Study on BRRI dhan47
IRRI Philippines	2013	-	3	New Employee Orientation Program
IRRI Philippines	2014	-	1	Management Intensive Workshop (Manager's Workshop)
IRRI Philippines	2014	-	3	Proposal Writing Workshop
IRRI Philippines	2015	-	3	Preparing for Leadership Programme/ Workshop
IRRI & Agricultural Learning and Impacts Network (ALINe) jointly organized in Bangladesh	2015	-	3	Monitoring, evaluation, and learning (MEL) workshop

YAAS, Kunming, China	2015	-	5	Workshop of the Exchange and Cooperation Consortium for Agricultural Sciences and Technology in China-South Asia
IRRI Philippines	2018	2		R programming, Statistical design and Analysis for Plant Breeding using R; Genomic selection

**Hunan Academy of Agricultural Sciences

LIST OF PUBLICATIONS

[Google Scholar (10 May 2026) record for all publications: Total number of publications >60;

Citation: 2420, h-index: 21, i10-index:28]

Sl#	Authors, year, title, journal, volume, and pages	Role played in producing each publication
1.	Quddus, M R, Rahman M A , Hasan M, Rasul M G, Mannan M A, Hasan M J, (2026). Genetic diversity and genome-wide association mapping for salt stress tolerance in diverse parental lines of hybrid rice. <i>Gene</i> , DOI: https://doi.org/10.1016/j.gene.2026.150003 (In press)	Conceived the idea, experiment designed, investigation, supervision, evaluation and data analysis and manuscript writing
2.	Chowdhury Y F, Azim T, Jewel N A, Elias S M, Hossain H, Sarker M R A, Rahman M S, Rahman M A , Iftakharuddaula K M, Seraj Z I (2025). Pyramiding salt tolerant QTLs of rice landrace Horkuch using fluorescence-based marker (KASP) enhances tolerance of commercial varieties. <i>CABI Agriculture and Bioscience</i> (2025) 6:1, 0100 https://doi.org/10.1079/ab.2025.0100	Supervised breeding and field research
3.	Al Galib, M.A., Farzana, S., Chakrobarty, T. et al. (2025). Multivariate analysis for identifying high-yielding rice cultivars based on seed yield and morphological traits. <i>Discov. Plants</i> 2, 256. https://doi.org/10.1007/s44372-025-00345-7	Conceived and designed the experiments
4.	Debsharma SK, Rahman MA , Khatun M, Disha RF, Jahan N, Quddus MR et al. (2024) Developing climate-resilient rice varieties (BRRI dhan97 and BRRI dhan99) suitable for salt-stress environments in Bangladesh. <i>PLoS ONE</i> 19(1): e0294573. https://doi.org/10.1371/journal.pone.0294573	Conceived the idea, experiment designed, investigation, led varietal development, supervision, evaluation and data analysis and manuscript writing
5.	Maniruzzaman S, Rahman MA , Hasan M, Rasul MG, Molla AH, Khatun H, Iftakharuddaula KM, Kabir MS, Akter S. Molecular Mapping to Discover Reliable Salinity-Resilient QTLs from the Novel Landrace Akundi in Two Bi-Parental Populations Using SNP-Based Genome-Wide Analysis in Rice. <i>International Journal of Molecular Sciences</i> . 2023; 24(13):11141. https://doi.org/10.3390/ijms241311141	Conceived the idea, experiment designed, investigation, supervision, evaluation and data analysis and manuscript writing
6.	Khanna, A., Anumalla, M., Ramos, J. et al. Genetic gains in IRRI's rice salinity breeding and elite panel development as a future breeding resource. <i>Theor Appl Genet</i> 137, 37 (2024). https://doi.org/10.1007/s00122-024-04545-9	Bred the salinity breeding materials, trial conduction, gather the trial data and revised the manuscript

7.	Rahman NMF, Malik WA, Kabir MS, Baten MA, Hossain MI, Paul DNR, Ahmed R, Biswas PS, Rahman MC, Rahman MS, Iftekharuddaula KM, Hadasch S, Schmidt P, Islam MR, Rahman MA , Atlin GN, Piepho HP. 2023. 50 years of rice breeding in Bangladesh: genetic yield trends. Theor Appl Genet. 2023 Jan;136(1):18. doi: 10.1007/s00122-023-04260-x. Epub. Erratum in: Theor Appl Genet. 2023 Mar 23;136(4):84.	Manuscript writing and editing
8.	Ruhul Quddus, M R, Rahman M A , Hasan M, Rasul M G, Mannan M A, Hasan M J, (2026). Developing Salinity-Tolerant Hybrid Rice Parental Lines through Integrative Breeding and Molecular Approaches. Bangladesh Rice Journal (<i>In press</i>).	Conceived the idea, experiment designed, investigation, supervision, evaluation and data analysis and manuscript writing
9.	Maniruzzaman S, Rahman MA , Hasan M, Rasul MG, Molla AH, Khatun H, Akter S. 2022. Genetic Mapping to Detect Stringent QTLs Using 1k-RiCA SNP Genotyping Platform from the New Landrace Associated with Salt Tolerance at the Seedling Stage in Rice. Plants (Basel). 26;11(11):1409. doi: 10.3390/plants11111409.	Conceived the idea, experiment designed, investigation, supervision, evaluation and data analysis and manuscript writing
10.	Debsharma SK, Rahman MA , Quddus MR, Khatun H, Disha RF, Roy PR, Ahmed S, El-Sharnouby M, Iftekharuddaula KM, Aloufi S, et al. SNP Based Trait Characterization Detects Genetically Important and Stable Multiple Stress Tolerance Rice Genotypes in Salt-Stress Environments. <i>Plants</i> . 2022; 11(9):1150. https://doi.org/10.3390/plants11091150	Conceived the idea, experiment designed, investigation, supervision, evaluation and data analysis and manuscript writing
11.	Yadav S, N Sandhu, S Dixit, VK Singh, M Catolos, RR Mazumder, MA Rahman , A Kumar. Genomics-assisted breeding for successful development of multiple-stress-tolerant, climate-smart rice for southern and southeastern Asia. Plant Genome. 2021 Jan 12:e20074. doi: 10.1002/tpg2.20074. Epub ahead of print. PMID: 33438317.	Experiment conducted for Biotic stress/ insect resistance, climate resilient rice lines development
12.	Rahman M A , M.J. Thomson, M. S. Alam, M. de Ocampo, J. Egdane and A. M. Ismail 2019. Assessing trait contribution and mapping novel QTL for salinity tolerance using the Bangladeshi rice landrace Capsule. Rice 12:63; https://doi.org/10.1186/s12284-019-0319-5	Conceived the idea, experiment designed, mapping population development evaluation and data analysis and manuscript writing
13.	Rahman M A , M.J. Thomson, M. S. Alam, M. de Ocampo, J. Egdane and A. M. Ismail 2016. Exploring novel genetic sources of salinity tolerance in rice through molecular and physiological characterization. Annals of Botany 117: 1083–1097. doi:10.1093/aob/mcw030	Conceived the idea, experiment designed, conducted and data analysis and manuscript writing
14.	Rahman M. A. , IK Bimpong, J.B. Bizimana, E. D. Pascual, M. Arceta, B.P. M. Swamy, F. Diaw, M. S. Rahman, and R.K. Singh 2017. Mapping QTLs using a novel source of salinity tolerance from <i>Hasawi</i> and their interaction with environments in rice. Rice 10:47. DOI 10.1186/s12284-017-0186-	Conceived the idea, experiment designed, and data analysis and manuscript writing
15.	Quddus MR, MA Rahman , N Jahan, S K Debsharma, RF Disha, M M Hasan, T L Aditya and B CY Collard 2019. Estimating pedigree-based breeding values and stability parameters of elite rice breeding lines for yield under salt stress during the boro season in Bangladesh. Plant Breed. Biotech. 7(3):257-271; https://doi.org/10.9787/PBB.2019.7.3.257	Conceived the idea, novel donors identified, experiment designed, carried out expt, and data analysis and manuscript writing
16.	Mondal S., T. H. Borromeo, M. G. Q. Diaz, J. Amas, M. A. Rahman , G. B. Gregorio, M. J. Thomson 2019. Dissecting QTLs for Reproductive Stage	Statistical data and QTL analysis and interpretation

	Salinity Tolerance in Rice from BRRI dhan47. Plant Breed. Biotech. 7(4):302-312. https://doi.org/10.9787/PBB.2019.7.4.302	results and revision of manuscript
17.	Rahman M. A. , A. A. Thant, M. Win, M. S. Tun, P. Moet Moet, K. T. Win, T. Myint, O. Myint, R. V. Labios, M. C. Casimero, G. B. Gregorio, D. E. Johnson, G. R. Singleton and R. K. Singh 2015. Participatory varietal selection (PVS): a “bottom-up” breeding approach helps rice farmers in the Ayeyarwady delta, Myanmar. SABRAO J. Breed. Genet 47 (3): 299-314.	Conceived the idea, experiment designed, conducted expt. and data analysis and manuscript writing
18.	Rahman MA , M. R. Quddus, N. Jahan, Asif Rahman, M. R. A. Sarker, H. Hossain and KM Iftekharuddaula 2019. Field rapid generation advance: an effective technique for industrial scale rice breeding program. The Experiment, 47 (2):2659-2670	Conceived the idea, experiment designed, method development, and manuscript writing
19.	Swamy, B.P.M., M.A. Rahman , M.A. Inabangan-Asilo, et al. 2016. Advances in breeding for high grain Zinc in rice. Rice 9: 49. doi:10.1186/s12284-016-0122-5	Contributed to the drafting the manuscript and in revisions
20.	Hossain, H., M.A. Rahman , M. S. Alam and R. K. Singh 2015. Mapping of quantitative trait loci associated with reproductive-stage salt tolerance in rice. Journal of Agronomy and Crop Science 201:17-31. doi:10.1111/jac.12086.	Contributed in experiment design, mapping population development, data and QTL analysis, and manuscript writing
21.	Collard B.C.Y., J. Beredo, B. Lenaerts, R. Mendoza , R. Santelices, V. Lopena, H. Verdeprado, C. Raghavan, G.B. Gregorio, L. Vial, M. Demont, K.M. Iftekharuddaula, M.A. Rahman , J.N. Cobb, M.R. Islam 2017. Revisiting rice breeding methods – evaluating the use of rapid generation advance (RGA) for routine rice breeding. Plant Production Science, DOI: 10.1080/1343943X.2017.1391705	Contributed to the Field RGA-Technique development; manuscript drafting and revisions
22.	Thomson, M. J, M de Ocampo, J. Egdane, M.A. Rahman et al. 2010. Characterizing the <i>Salto1</i> Quantitative Trait Locus for Salinity tolerance in Rice. Rice Vol. 3: 148-160. DOI 10.1007/s12284-010-9053-8	Contributed to population development, marker application and QTL analysis
23.	Islam M. R., M.R.A. Sarker, N. Sharma, M.A. Rahman , B. C. Y Collard, G.B. Gregorio and A.M. Ismail 2015. Assessment of adaptability of recently released salt tolerant rice varieties in coastal regions of South Bangladesh. Field Crops Research 190: 34-43 doi:10.1016/j.fcr.2015.09.012	Experiments design, evaluation, data collection and analysis
24.	Ferdous N, M. Z. H. Hawlader, S. K. Biswas, M. A. Rahman , S. Hosen, H. B. Shozib, M. A. Haque and M. A. Siddiquee 2020. Bio-physicochemical study for glutinous and nonglutinous rice with genetic diversity of Bangladeshi rice germplasm. IJRDO - Journal of Biological Science, 6(3):1-15	Germplasm characterization and genetic diversity
25.	Hoque A. B. M. Z., M. A. Haque, M. R. A. Sarker and M. A. Rahman 2015. Marker-assisted introgression of <i>Salto1</i> locus into genetic background of BRRI dhan49. Int. J. Biosci. 6(12):71-80. doi: http://dx.doi.org/10.12692/ijb/6.12.71-80	Conceived the idea, experiment designed, research supervised, and manuscript revised

26.	Rahman, M. A. , M. A. I. Khan, S. M. Jobair Hossain, M. S. Hossain, M, A. Hossain and S. S. Haque 2002 Quantitative Karyotype Analysis of <i>Lycopersicon esculentum</i> cv. Oxheart. Pakistan Journal of Biological Sciences 5(5): 581-584.	Conceived the idea, experiment designed, research supervised, and manuscript revised
27.	Sarker MRA, N Sharma, MA Rahman , MR Islam, SA Islam, MR Khanom and MAI.Khan Identification of modern Aman rice varieties suitable for salt affected Satkhira region of Bangladesh. The Experiment, 2018, 46(3): 2632-2642	Experiments design, cytological study, data collection and analysis, manuscript writing
28.	Rahman, M. A. , M. S. Alam, Q. N. Ahmad, M. A. I. Khan and Abdullah-Al-Mahbub 2003. Genetic analysis on yield and its component traits of tomato (<i>Lycopersicon esculentum</i> Mill.). The Agriculturists, Vol.1 (1): 21-26.	Experiments design, data collection and analysis, manuscript writing and revision
29.	Rahman, M. A. , M. S. Alam, Q. N. Ahmad and A A Mahbub 2003. Character association and path analysis in tomato (<i>Lycopersicon esculentum</i> Mill.). The Agriculturists, Vol.1 (1): 15-20.	Experiments design, data collection and analysis, manuscript revision
30.	Rahman, M. A. , H Hossain, M.A.Hossain, M. K. Hossain and M. Khatun 2006. Genotypic response to environment and stability appraisal in tomato (<i>L. esculentum</i> Mill.). The Agriculturists Vol. 4 (1&2): 59-66.	Conceived the idea, experiment designed, conducted expt., and manuscript writing
31.	Hossain, H., M.A. Rahman , M. S. Alam and R. K. Singh 2011. Physiology and genetics of salt-proof rice- bringing hope for the researcher. Eco-friendly Agril. J. 4(5): 599-604.	Conceived the idea, experiment designed, conducted expt., and manuscript writing
32.	Hossain, H., M.A. Rahman , M. S. Alam and R. K. Singh 2011. Inheritance pattern of important traits associated with reproductive-stage salt tolerance in rice. Intl. J. BioRes. 10(5):53-57.	Conceived the idea, experiment designed, conducted expt., and manuscript writing
33.	Hossain, H., M.A. Rahman , M. S. Alam and R. K. Singh 2011. Path analysis: a new approach to determine the contribution of traits to reproductive-stage salt tolerance in rice. Intl. J. BioRes. 10(6):47-51.	Manuscript revision
34.	Islam, M.R, M. A. Salam, T. L. Aditya, M. A. R. Bhuiyan, M. A. Rahman , M. S. Rahman, S. Khatun and H. U. Ahmed. 2008. Improvement of rice genotypes for salt affected areas of Bangladesh. Intl. J. BioRes. 4 (5): 81-85.	Experiment designed, data analysis and manuscript revision
35.	Islam, M.R, M A Salam, M. A. R. Bhuiyan, M. A. Rahman and G.B. Gregorio. 2008. Participatory variety selection for salt tolerant rice. Intl. J. BioRes. 4 (3): 21-25.	Experiment designed, data analysis and manuscript revision
36.	Biswas, P.S, M.A. Salam and M. A. Rahman 2001. Improved deepwater rice (<i>Oryza sativa</i> L.) genotypes for shallow flooding. Bangladesh J. Pl. Breed. and Genet. 14(1): 37-41.	Data collection and analysis manuscript revision

37.	Haque, E, M.A. Rahman , M.A. Hossain, M. A Salam and M. Haque 2002. Genetic composition of BRRI varieties: II. BRRI dhan27-BRRI dhan41 and BRRI hybrid dhan1. Bangladesh Rice J., 11 (Special Issue): 53-63.	Data collection and analysis, manuscript writing and revision
38.	Hossain, M.S, M.A. Rahman , M.A.I. Khan, Abdullah-Al-Mahbub and G.M. Mujibar Rahman, 2000. Use of solar energy as seed treating agent to control the seed borne fungi of rice. Bangladesh J. Environ Sci., 6(2): 447-450	Data collection and manuscript revision
39.	Hossain, S.M. J, M.A.I. Khan, M.A. Rahman , M.A. Hossain, S.S. Haque and G.R. Janardhana. 2002. Biodiversity study of <i>Fusarium</i> spp. on stored cereal grains in Karnataka State, India. Pakistan Journal of Biological Sciences. 5(4): 446-448.	Manuscript writing and revision
40.	Hossain, M.A., B.C. Roy, M.A. Rahman , A.I. Khan and A.W. Julfikar, 2004. Performance of IR68877H and IR69690H (BRRI Hybrid dhan1) in the South-central Region. J. Biol. Sci. 4(2): 130-133.	Data collection and manuscript revision
41.	Hossain, H., M.A. Newaz, M.A. Rahman and M.A. Hossain, 2004. Genotype-environment interaction for yield and yield contributing characters in tomato (<i>L. esculentum</i> Mill.). Bangladesh J. Environ. Sci. 10: 141-146.	Data collection and manuscript revision
42.	Hossain, H., M.A Newaz, M.A. Rahman and M.A. Hossain, 2004. Genetic variability, heritability and scope of improvement in tomato (<i>L. esculentum</i> Mill.). Bangladesh J. Environ. Sci. 10: 131-136.	Data collection and manuscript revision
	Hossain, K., A. Akter, M. A. Rahman , M.H. Ali and M. A. Hossain 2009. Prediction of heterosis for yield and its component traits among hybrids of line X tester crosses in rice. Eco-friendly Agril. J. 2 (2): 494-498.	Data collection and manuscript revision
43.	Khatun, S., P.S. Biswas, M.A. Rahman , M.R. Islam and M.A. Salam 2008. BRRI dhan42 and BRRI dhan43: two upland rice varieties for drought prone environment. Intl. J. BioRes. 4 (5): 48-51.	Data collection and manuscript revision
44.	Khan, M.A.I., S. Hossain, M.A. Rahman , S.M. Jobair Hossain and G.M. Mujibar Rahman. 2002. Solar heat: it's use for controlling seed borne fungal; infections of wheat. Pakistan Journal of Biological Sciences 5(4): 449-451.	Data collection and manuscript revision
45.	Khan, M.A.I, M.A. Hossain, M.A.H. Khan, M.A. Rahman , B.C. Roy and Nur-E-Elahi, 2001. Yield performance and comparative cost analysis of wet seeded and transplanted boro rice. Bangladesh J. Seed Sci. & Tech. 5 (1&2): 79-84.	Data collection and manuscript revision
46.	Khatun, M., M. A. Rahman , S. Khatun, K. M. Akther and H. Hossain 2006. Genetic variability, character association and path coefficient analysis in wheat (<i>Triticum aestivum</i> L.). Bangladesh J. Pl. Breed. Genet. 4 (1&2): 41-46.	Data collection and manuscript revision

47.	Khatun, M., T. L. Aditya, M. A. Rahman , K.M. Iftekharuddaula, and M. A. Salam 2010. Stability analysis of premium quality rice genotypes. Intl. J. BioRes. 8(2):1-5.	Data collection and manuscript revision
48.	Roy, B. C., M. A. Hossain and M. A. Rahman 2004. Ratooning ability of photoperiod-sensitive rice varieties transplanted in <i>boro</i> season. PJBS 7(3):368-371.	Data collection and manuscript revision
49.	Islam, M.R, M A Salam, M. A. R. Bhuiyan, M. A. Rahman , R. Yasmeen, M. S. Rahman, M. K. Uddin, G. B. Gregorio and A. M. Ismail. 2008. BRRI dhan47: a salt tolerant rice variety for <i>boro</i> season isolated through participatory variety selection for salt tolerant rice. Intl. J. BioRes. 5 (1): 1-6.	Data collection and data analysis, manuscript revision
50.	Sharma N., M. R. A. Sarker, M. A. Rahman and M. R. Islam, 2013. Participatory varietal selection of modern T. Aman rice varieties in salt affected coastal area of Bangladesh. Eco-friendly Agril. J. 6(08): 141- 145.	Experiment designed, supervision, data analysis and manuscript revision
51	Sharma N, M. R. A. Sarker, M. A. Rahman and M. R. Islam 2013. Varietal evaluation of rice for improving productivity in southern Bangladesh. Intl. J. BioRes. 15(4): 7-13.	Experiment designed, supervision, data analysis and manuscript revision

Book/ Manual

Rashid M.H., **M. A. Rahman**, S. Begum and M. A. Z. Chowdhury 2021. Boro Rice Cultivation in Saline Zone. Bangladesh Agricultural Research Council, Farmgate, Dhaka. pp21.

Rahman M A, M. H. Rashid, S. N. Begum, N. Jahan, K. M. Iftekharuddaula and M.S. Ali. (2024). Rice Variety Registration and Release Systems in Bangladesh. Bangladesh Agricultural Research Council (BARC), New Airport Road, Farmgate, Dhaka-1215, Bangladesh. pp60

Book Chapters (Peer Reviewed)

- i) **Rahman M. A.**, H. Khatun, H. Hossain, K. M. Iftekharuddaula, and R. K. Singh 2024. Recent Approaches in Breeding for Salt Tolerance in Rice in Bangladesh. R. K. Singh et al. (eds.), Genetic Improvement of Rice for Salt Tolerance, Springer Nature Singapore Pte Ltd. 2024. https://doi.org/10.1007/978-981-99-3830-8_4
- ii) **Rahman M. A.**, H. Khatun, M. R. A. Sarker, H. Hossain, M. R. Quddus, K. M. Iftekharuddaula and M. S. Kabir 2021. Enhancing Abiotic Stress Tolerance to Develop Climate-Smart Rice Using Holistic Breeding Approach [Online First], IntechOpen, DOI: 10.5772/intechopen.97283. Available from: <https://www.intechopen.com/online-first/enhancing-abiotic-stress-tolerance-to-develop-climate-smart-rice-using-holistic-breeding-approach>
- iii) **Rahman, M. A.**, M. R. A. Sarker, N. Sharma, M. K. Mondal, M. R. Islam, G. B. Gregorio, E. Humphreys and T. P. Tuong 2015. Challenges and opportunities for *aman* rice cultivation in *ghers* used for brackish water shrimp production. Edited by Humphreys, E., T.P. Tuong, M.C. Buisson, I. Pukinskis and M. Phillips. 2015. Revitalizing the Ganges Coastal Zone: Turning Science into Policy and Practices Conference Proceedings. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food (CPWF). 600pp.

- (iv) Sarker, M.R.A., **M.A. Rahman**, N. Sharma, M.R. Islam, M.K. Mondal, G.B. Gregorio, E. Humphreys and T.P. Tuong 2015. Performance of improved *aman* rice varieties in the coastal zone of Bangladesh. Edited by Humphreys, E., T.P. Tuong, M.C. Buisson, I. Pukinskis and M. Phillips. 2015. Revitalizing the Ganges Coastal Zone: Turning Science into Policy and Practices Conference Proceedings. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food (CPWF). 600pp.
- (v) Ismail, A. M, M. J. Thomson, G. V. Vergara, **M. A. Rahman** and R. K. Singh 2010. Designing resilient rice varieties for coastal deltas using modern breeding tools. CAB International 2010, Tropical Deltas and coastal Zones: Food production: 154-165.
- (vi) Salam, M. A., M. R. Islam, M. S. Rahman and **M. A. Rahman** et al. 2010. Rice varieties and cultural management practices for high and sustained productivity in the coastal wetlands of southern Bangladesh. CAB International 2010. Tropical Deltas and coastal Zones: Food Production: 183-198
- (vii) Salam, M A, **M. A. Rahman**, M. A. R. Bhuiyan, K. Uddin et al. 2007. BRRI dhan47: a salt-tolerant variety for the boro season. IRRN Vol 32/1: 42-43.
- (viii) Manzanilla D., **M. A. Rahman**, M. A Salam and N. Sharma 2012. Farmers gain from 'salinity-buster BRRI dhan47. CURE Matters Vol. 2 No. 1: page 4.
- (ix) **Rahman, M. A.**, M. R. A. Sarker, N. Sharma, M. R. Islam, G. B. Gregorio and E. Humphreys 2013. Turning adversity into opportunity. CURE Matters Vol. 3 No. 1: page 16.
- (x) Salam, M. A., P. S. Biswas and **M. A. Rahman** 2004. Strategies for increasing productivity of rice in medium flooded areas of Bangladesh. Rice Research and Development in the Flood-prone Ecosystem. Edited by S. I. Bhuiyan, M. Z. Abedin. V. P Singh and B. Hardy, 2004 IRRI, 163p.

Reviewer of peer-reviewed journals: Current Opinion in Plant Biology, Scientific Reports, Field Crops Research, AoB Plants, Crop & Pasture Science, Vegetos; Agrosystems, Geosciences & Environment etc.

Proceedings/ abstracts

1. **Rahman, M. A.**, M. Thomson, M. Ocampo, J. Egdane, M. A. Salam, A. Ismail 2008. Marker-assisted backcrossing to introgress the *Saltol* QTL for rapid conversion of a Bangladeshi mega-variety to salt-tolerant type. Abstract no. CS4-S1, P7. 5th International Crop Science Congress & Exhibition (ICSC 2008). www.cropscience2008.com. April 13-18, 2008. Jeju, Korea, p281.
2. **Rahman, A.**, M. J. Thomson, M. P. de Ocampo, J. Egdane, A. M. Ismail 2009. Marker-assisted backcrossing of *Saltol* and mapping novel QTLs associated with salinity tolerance in rice by selective genotyping. Paper presented at the Generation Challenge Programme's Annual Review Meeting, 19-23 Sep 2009, Bamako, Mali
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List of grants and gift awards

Authors	Grant Title, year of funding and duration	Total award amount (US\$)	Amount attributed to the applicant (US\$)	Granting agency	The role played in developing each grant
Seraj Z. I. Rahman M. A.	DNA marker assisted breeding for producing highly stress tolerant rice for coastal Bangladesh by introgression of multiple salt tolerant loci (QTLs) into commercial cultivars. (National Agricultural Technology Project; NATP-2) (Competitive research grant) 2018; Duration: May 2018-Apr 2021	170880/-	80880/-	World Bank and GOB	PI- Breeding part
Multi-partners	Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience in Bangladesh (PARTNER-Salinity & Upland Drought) Duration: July 2023- June 2028	58.0 million	40000/- per Year	World Bank and GOB	PI- Salinity & Upland Drought part
Ten Partners	Transforming rice breeding through capacity enhancement of BRRI (BMGF funded project): Nov2015- Nov 2023	8.0 million	(35000/Year)	Bill and Melinda Gates foundation (BMGF)	PI- Salinity Breeding part
Rahman M. A.	Physiological development through trait discovery for boosting rice yield in changing climatic conditions. KGF funded (Competitive research grant)- (<i>Funded</i>) April 2017-March 2020	132530	60000	GoB	PI- Breeding part
Rahman M. A.	Pyramiding salinity and submergence tolerant genes into BRRI dhan49 through marker-assisted selection-National Agricultural Technology Project (NATP-1) (Competitive research grant: <i>Funded</i>) Jul 2011-Jan 2013	100000	100000	GoB/ World Bank funded	PI

Multi-partners	Stress tolerant rice for poor farmers in Africa and South Asia (STRASA-Salinity), July 2011-June 2013 & February 2015-March 2019	-	4500/Year	BMGF	PI- Salinity Breeding part
Two partners	Asian Food and Agriculture Cooperation Initiative (AFACI Food Security Project-Salinity) - Funded by South Korea, Aug 2011-Jan 2013 and 2018-2021	10000/Year	5000/Year	South Korea	Co-PI: Salinity Breeding part
Multi-partners	Integrated Agricultural Productivity Project (IAPP-Salinity Component): GoB/ Global Agricultural Food Security Program (GAFSP) funded Project for Stress tolerant rice based technology development and extension for Rangpur and Barisal Region- Jan 2012-Jan 2016	-	(16500/Year)	GoB/ Global Agricultural Food Security Program (GAFSP)	PI: Salinity Breeding part
Multi-partners	Stress tolerant rice for poor farmers in Africa and South Asia (STRASA-Salinity), July 2011-June 2013 & February 2015-March 2019		4000/Year	BMGF	PI: Salinity Breeding part
Multi-partners	Development of High Yielding Rice Varieties for the Coastal Wetlands of Bangladesh under Poverty Elimination through Rice Research Assistance (PETRRA) - a project funded by DFID, managed by IRRI in close collaboration with BRRI (worked with resource-poor-farmers, NGOs and other stakeholders) 1999-2004	-	-	DFID	as Co-PI Salinity part-BRRI
Multi-partners	CPWF#7: Development of technologies to harness the productivity of the salt-affected areas of the Indo-Gangetic, Mekong, and Nile River Basins 2004-2006	-	8000\$/Year		as PI Salinity part- BRRI (National partner)
Multi-partners	Validation and delivery of new technologies for increasing the productivity of Flood-prone rice lands in South and South East Asia (IFAD/IRRI/BRRI collaborative project) 1999-2001	-	-	-	as Co-PI Salinity part-BRRI (National partner)
	Improving livelihoods of rice-based rural households in lower region of the Ayeyarwady delta in Myanmar- <i>United Nations Office for Project</i>	-	-	-	As Team member

	Services (UNOPS)-LIFT funded project, February 2013-January 2014				
	Biofortification breeding (HarvestPlus) and molecular breeding of abiotic-biotic stresses tolerance (TRB/STRASA): February 2014-February 2015	-	-	-	As Team member
	IRRI-NARES Network Trial & AFACI (SHR+ Project):2020-2025		~25000\$/Year	BMGF & RDA, Korea	As PI (Salinity and Submergence)
	USAID-Feed the Future Climate Resilient Cereals Innovation Lab (CRCIL), KSU, USA (2023-2026:Core win)		~6000\$/Year	USAID	As PI (Salinity and DSR-Aus)
	Research Program including staff management of BRRI regional station, Bhanga, Faridpur (2018-2022); BRRI Cumilla (2025-Present)		~250000\$/Year	GOB, IFAD, World Bank	Head (CEO)

Post-graduate students supervised (2012 – present)

Title of Thesis	Student name	University	Degree	Start date	Graduation date
Marker-assisted introgression of <i>Saltol</i> locus into genetic background of BRRI dhan49	A.B.M Zahidul Hoque	Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Salna, Gazipur, Bangladesh	M. S.	2012	2014
Phenotypic characterization and genetic diversity analysis of eggplant (<i>Solanum</i> spp.) germplasm using SSR marker	Kashpia Tasrin	Sher-e-Bangla Agricultural University, Dhaka, Bangladesh	M. S.	2014	2016
Genetic diversity analysis of Bangladeshi local rice germplasm differing in salinity tolerance using molecular markers	Md. Rashidul Islam	BSMRAU, Salna, Gazipur, Bangladesh	M. S.	2015	2017
Phenotypic and molecular characterization of aromatic rice genotypes for salt tolerance	Md. Mostafizar Rahaman	BSMRAU, Salna, Gazipur, Bangladesh	M. S.	2015	2017
Effect of salinity on seed germination and seedling growth of four rice cultivars in hydroponic technique	Mithun Chandro Roy	Bangladesh Agricultural University, Mymensingh 2202	M. S.	2015	2017
Phenotypic and molecular diversity analysis for salinity tolerance in rice	Rubayat Sharmin	Jagannath University, Dhaka, Bangladesh	M.Sc.	2016	2018

Morpho-physiological, Characterization, Genetic Diversity and Dissection of QTLs for Salinity Tolerance in Rice	Salma Akter	Bangladesh Agricultural University, Mymensingh 2202	Ph.D	2017	2022
Exploring salt tolerant donors and mapping quantitative trait loci (QTLs) for salt tolerance using Bangladeshi rice germplasm	Sheikh Maniruzzaman	BSMRAU, Salna, Gazipur, Bangladesh	Ph.D	2018	2023
Enhancing yield and salinity tolerance of hybrid rice using genomic prediction and Genome-Wide Association Mapping	Md. Ruhul Quddus	Gazipur Agricultural University, Salna, Gazipur, Bangladesh	Ph.D	2022	Ongoing
Genetic and genomic approaches for identifying major blast resistance loci and pyramiding of blast and Bacterial Leaf Blight (BLB) resistance alleles into the parental lines for developing rice hybrids	Laila Ferdousi Lipi	Gazipur Agricultural University, Salna, Gazipur, Bangladesh	Ph.D	2022	Ongoing
Molecular characterization of aroma traits in rice	Mohaiminul Islam	Gazipur Agricultural University, Salna, Gazipur, Bangladesh	M.S.	2023	Ongoing

List of released germplasm, cultivars, and the role played in developing each

(Rice varieties developed and released in Bangladesh as Lead PI⁺ /Co-PI)

Technologies/products (Cultivar name)	Type of technology	Year of release	<u>The role played in each rice variety development and release</u>
BRRi dhan42 (BR6058-6-3-3)	Drought tolerant direct seeded rice (upland <i>aus</i>) variety; Zn enriched	2004	Evaluated and selected lines from Observational yield trial (OYT) to release
BRRi dhan43 (BR5543-5-1-2-4)	Drought tolerant direct seeded rice (upland <i>aus</i>) variety; Zn enriched	2004	Evaluated and selected lines from OYT to release
BRRi dhan44 (BR6110-10-1-2)	Tidal submergence tolerant rice variety	2005	Involved in yield trials at hotspot region
*BRRi dhan47 (IR 63307-4B-4-3)	Salt tolerant <i>Boro</i> rice variety for Irrigated ecosystem	2007	Evaluated and selected, lines, conducted PVS from OYT to release
BRRi dhan50 (BR6902-16-5-1-1)	Premium quality rice (Basmati type) for Irrigated ecosystem	2008	Selected desirable lines from pedigree nursery; evaluated and selected from OYT to release

BRRI dhan53 (BR5778-156-1-3-HR14)	Salt tolerant <i>T. Aman</i> (RLR) rice variety	2010	Evaluated and selected, conducted PVS from OYT to release
BRRI dhan54 (BR5999-82-3-2-HR1)	Salt tolerant <i>T. Aman</i> (RLR) rice variety	2010	Evaluated and selected; conducted PVS from OYT to release
BRRI dhan55 (IR 73678-6-9-B)	Salt, cold and drought tolerant rice variety	2011	Evaluated and selected, conducted PVS from OYT to release
**BRRI dhan28- <i>Saltol</i> [†] (IR 89573-84)	Salt tolerant <i>Boro</i> rice line for Irrigated ecosystem	MABC product	Crossing design, MABC, line selection, evaluation and phenotyping
**BR11- <i>Saltol</i> [†] (IR 89574-7)	Salt tolerant <i>T. Aman</i> (RLR) rice line	MABC product	Crossing design, MABC, line selection, evaluation and phenotyping
BRRI dhan61 [†] (BR7105-4R-2)	Salt tolerant <i>Boro</i> rice variety/ Irrigated rice	2013	Crossing design, from RGA, OYT to release
BRRI dhan63 (BR7358-30-3-1)	Premium quality rice for Irrigated ecosystem	2014	Crossing design, and selection from pedigree nursery
BRRI dhan65 [†] (OM1490)	Early, direct seeded rice (<i>aus</i>) for drought prone ecosystem	2014	Conducted PVS from OYT to release
BRRI dhan67 [†] (BR7100-2R-6-6)	Salt tolerant <i>Boro</i> /Irrigated rice variety	2014	Crossing design, from RGA, OYT to release
BRRI dhan73 [†] (IR78767-B-SATB1-28-3-24)	Salt tolerant <i>T. Aman</i> (RLR) rice variety	2015	Conducted PVS from OYT to release
BRRI dhan78 (IR77092-B-2R-B-10)	Dual tolerant (Salinity+ <i>SUB1 T. Aman</i> rice variety	2016	MAS, conducted PVS from OYT to release
BRRI dhan83 [†] (BR6848-3B-12)	Drought tolerant direct seeded rice (upland <i>aus</i>) variety	2017	Planning, Selected promising lines, using modified bulk method, OYT to release
BRRI dhan91 (BR10230-15-27-7B)	Shallow deep-water rice (HYV)	2019	Conducted yield trials, selection until release
BRRI dhan97 [†] (IR83484-3-B-7-1-1-1)	Salt tolerant irrigated (Boro) Rice	2020	Selected from F ₄ generation in pedigree nursery, evaluated and selected lines from yield trials to release
BRRI dhan99 [†] HHZ5-DT20-DT2-DT1 (GSR IR1-5-D20-D2-D1)	Salt tolerant irrigated (Boro) Rice	2020	Evaluated and selected lines; conducted PVS from OYT to release
BRRI dhan112 [†] (BR11716-4R-102)	Salt tolerant rainfed (<i>T. Aman</i>) Rice	2024	Conceived the idea, planning, material development, genotyping, phenotyping to release
BRRI dhan117 [†] (BR11712-4R-44)	Salt tolerant+Blast Resistant irrigated (Boro-dry season) Rice	2025	Conceived the idea, planning, material development, genotyping, phenotyping to release

†Worked as Lead-PI for varietal development and release and worked as co-PI for the rest. The National Seed Board (NSB) has finally been approved the release of rice varieties and published through official gazette notification in Bengali. PVS: Participatory Variety Selection

****First introgression of *Saltol* locus into the mega varieties and developed two salt tolerant rice genotypes, IR89573-84 (BRRI dhan28-*Saltol*) and IR89574-7 (BR11-*Saltol*) through marker-assisted breeding at IRRI that are under advance stage of testing for release in Bangladesh and Myanmar.**

Work experience

- Led the Rice Breeding Program of BRRI funded by Bill and Melinda Gates Foundation and Government of Bangladesh (GoB) and also at international level (STRASA, TRB, IFAD, CURE, PETRRA, CRCIL)
- Have extensive research experience (>20 years) on plant breeding; physiology of abiotic stresses including field-based phenotyping on salinity, drought, submergence, stagnant flooding and heat in hotspots; developed and released > 15 inbred rice varieties for diverse ecosystems including climate resilient cultivars for salinity, upland (DSR & Jhum rice in hilly areas) drought and submergence/flood prone environments
 - Genetic gain enhancement program through modern breeding
 - Extensive experience in research project management including project implementation, budget management, technical and financial reporting; project scientist and staff management
 - Maintaining partnership/collaboration with National (BRRI-DAE-Universities-BADC: GOB Partners, NGOs), international (IRRI-BRRI Network; BRRI-AFACI, RDA, Korea; USAID-Feed the Future Climate Resilient Cereals Innovation Lab (CRCIL), KSU, USA; and private partnership (seed companies)
 - Experienced with agricultural production and seed systems of Bangladesh; market and supply chain management systems
 - Working experience in South Asia (Bangladesh, India) and Southeast Asian Countries (Myanmar, Philippines, Indonesia) and China
 - Supervised thesis research of MS and PhD students for their degrees
 - Contributed to develop region specific product profile, seed delivery system, replacement of older and obsolete varieties through Head to Head Trial
 - Liaised with IRRI and NARES in Myanmar, Philippines and Bangladesh
 - Developed, coordinated and managed research projects and supervised MS and PhD students
 - Provided training National Agricultural Research and Extension System (NARES) partners in Philippines, Myanmar and Bangladesh

Country experience: Research for development work done on conventional & molecular breeding, rice varietal development, seed production and networking system, technology dissemination and farmer's participatory research in Bangladesh, Philippines, Indonesia, Myanmar and China.

Coordination/collaboration with different partners

Experienced in working with people from different nationalities (Australia, Bangladesh, China, India, Myanmar, Philippines, South Korea, Sudan and USA) and very strong communication and coordination with different collaborators in national and international level (e.g. Dhaka University, BAU, BARC, BINA, BARI, DAE, BRAC, IRRI, DANIDA, Department of Agriculture [DoA], Myanmar, Department of Agricultural Research [DAR], Yezin, Myanmar, CIMMYT)

Referees

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