

**CV of Dr. Md. Alamgir Hossain**  
**Chief Scientific Officer (Plant Breeding)**  
**BRRRI Regional Station, Barisal**

1	Name	:	<b>Dr. Md. Alamgir Hossain</b>
2	Father's name	:	Late Sabdul Ali Khondoker
3	Mother's name	:	Late Rabea Khatun
4	Husband's name	:	Not applicable
5	Gender	:	Male
6	Designation	:	Chief Scientific Officer
7	Institution	:	Bangladesh Rice Research Institute
8	Date of joining in the present position	:	September, 2013
9	Date of first joining	:	21 November 1994
10	Date of birth and Age	:	Date of Birth: 30-06-1964; Age: 48 years 10 months 20 day (as on 09-05-2013)

**11. Educational Qualification:**

Degree/Certificate	Class/Grade/ Division	University/ Institute/Board	Year
Post Doctoral Fellow (Golden rice and High Zinc Rice)		International Rice Research Institute	2013-14
PhD in Genetics and Plant Breeding	N/A	BAU, Mymensingh (Thesis at IRRI, Philippines))	2010
MS in Genetics and Plant Breeding	GPA=3.82 (First Class)	IPSA (Now BSMRAU), Gazipur	1998
BSc Ag. (Hons.)	2nd Class	BAU, Mymensingh	1988
HSC (Science)	First Division	Board of Intermediate and Secondary Education, Rajshahi	1982
SSC (Science)	First Division	Board of Intermediate and Secondary Education, Rajshahi	1980

IPSA = Institute of Postgraduate Studies in Agriculture; BSMRAU = Bangabandhu Sheikh Mujibur Rahman Agricultural University; BAU = Bangladesh Agricultural University; IRRI= International Rice Research Institute

*Attachment :Copies of 5 academic certificates Sl # 01 -05.*

**12. Field of Specialization:** Rice Breeding, Genetic Engineering and Marker Assisted Backcrossing.

### 13. Training:

#### (a) In Country (2)

Organization	Year	Duration		Name of Programme
		Months.	Days	
Bangladesh Rice Research Institute (BRRI), Gazipur	1994-95	2	-	Rice production, applied research, communication and administration
Bangladesh Agricultural Research Council (BARC)	2008	-	5 Days	GMO and their biosafety issues

#### (b) Abroad (05)

Organization	Year	Duration		Name of Programme
		Months.	Days	
China National Hybrid Rice Research and Development Centre, Hunan, China	1997	3	100	Introduction Training on hybrid rice Technology
Directorate of Rice Research Hyderabad, India	1998	-	20	International Training on Hybrid Rice Seed Production Technology
China National Rice Research Institute, Hangzhou, China	2001		45	Hybrid rice Breeding Training Course
IRRI, Philippines	2004	-	7	Introduction to SAS
IRRI/PNRI, Philippines	2005	-	10	Handling the radioactive materials
Chiang Mai University, Thailand	2011	-	7	Crawford Fund Master Class Communicating Research to Stakeholders

### 14. Research Interest and experiences:

a) Rice breeding for micronutrient (zinc, iron and Beta-carotene) and tidal submergence and super high yield.

#### Directly involved in the varietal development activities:

- Several varieties already released (BRRI dhan33, BRRI dhan37, BRRI dhan38, BRRI dhan39, BRRI dhan50, BRRI dhan55, BRRI dhan59, BRRI dhan60 and BRRI Hybrid -1)
- Development of High Zn Rice (BRRI dhan62 and BRRI dhan64), which considered as front liner micronutrient-dense biofortified HYV rice in rice growing world under HarvestPlus project.
- Directly involved in development of Golden Rice (BRRI dhan29 version)

**b) Experience in rice gene transformation, cloning and marker assisted selection**

- Ferretin Gene cloned from Soybean (*Glycine max*) and French bean (*Phaseolus vulgaris*). Construction of eight transformation vector with the combination of Two ferretin gene and two endosperm specific promoter Glubolin(Glb-1) and Glutalin(GluB-4). Four of them had selectable marker and rest four with out selectable marker within transferable gene sequences.

List of the complete transformation vectors

Sl#	Complete transformation vectors	Size (Kb)
1	pC0380- <i>GmH1</i> -GluB4	6.8+0.9+1.4= 9.1
2	pC1380- <i>GmH1</i> -GluB4	8.8+0.9+1.4= 11.1
3	pC0380- <i>GmH1</i> -Glb-1	6.8+0.9+0.8= 8.5
4	pC1380- <i>GmH1</i> -Glb-1	8.8+0.9+0.8= 10.5
5	pC0380- <i>PvFer</i> -GluB4	6.8+0.9+1.4= 9.1
6	pC1380- <i>PvFer</i> -GluB4	8.8+0.9+1.4= 11.1
7	pC0380- <i>PvFer</i> -Glb-1	6.8+0.9+0.8= 8.5
8	pC1380- <i>PvFer</i> -Glb-1	8.8+0.9+0.8= 10.5

- **Developed a simple method for foreground selection of Golden rice. This method is efficiently using in Golden rice breeding.**

The Golden rice genes express in rice endosperm producing golden yellow color that acts as a visible physical marker. Since the golden rice gene (Crt1) dominant in nature, it express both in heterozygous and homozygous condition. When a normal variety, BRR1 dhan29 is hybridized with a Golden rice event, the F<sub>1</sub> seeds become golden yellow because it contains golden rice allele in heterozygous condition. Again this F<sub>1</sub> plant backcrossed with the recurrent parent, BRR1 dhan29, it produced 50 percent homozygous seeds comprising two alleles of BRR1 dhan29 and the rest 50 percent heterozygous seeds sharing alleles from golden rice and BRR1 dhan29. The endosperm of these 50 percent heterozygous seeds were golden in color and the other 50 percent homozygous endosperm had normal rice color. Since the F<sub>1</sub> seeds grow in half cut lemma and palea, the upper part of the grain become pointed and a thick-brown alleuron layer develops around the small pointed endosperm. Because of this thick-brown alleuron layer, it becomes difficult to distinguish between heterozygous golden yellow endosperm and homozygous normal endosperm.

Under this situation a hypothesis was formulated, if the alleuron layer could be removed then the golden yellow endosperm would be visible. Through polishing the grain alleuron can be removed but it also removes the embryo from the endosperm which is not desirable. Another option is bleach out the alleuron using sodium hypochlorite (NaOCl). In this case, embryo remains intact, therefore this simple bleaching technique was introduced selecting colored BC<sub>1</sub> seeds which saved lot of time, and money but very efficient.

**c) Experience in Standardization of a rapid method for grain iron estimation in rice and exploitation of X-RF in rice grain iron estimation**

Four staining reagents viz. orthophenanthroline, 2,2-dipyridyl, ferrozine, and ferene were evaluated and all the staining reagents are found effective in color development with iron and subsequent colorometric measurement directly correlated with grain iron content. The method was further validated and found very effective for the estimation of rice grain iron.

**(d) Involvement in development of Research Programme**

HarvestPlus, Golden rice, Development of super high yielding varieties and several other projects

**e) Supervision of MS/PhD Thesis**

Sl#	Title of the Thesis	Student Name and Reg. No.	Year
1	Combining ability of new plant type (NPT) traits in rice ( <i>Oryza sativa L.</i> )	Khaleda Akter Reg No.2002-11-1142	BSMARAU, winter 2004
2	Combining ability and heterosis of new plant type(NPT) traits in rice ( <i>Oryza sativa L.</i> )	Md. Nur Alam Reg No. 2008-05-2117	BSMARAU, winter 2009
3	Genetic diversity in micronutrient dense rice	Md. Rokebul Hasan Reg No. 2009-05-2311	BSMARAU, winter 2011

**14. Publication (SO to PSO)**

Sl. No	Publication Type	References
<b>(a) Reputed International Journal</b>		
1	Full Paper	A. W. Julfikar, M. Mohiul Haque, A. K. G. M. Enamul Haque and <b>M. Alamgir Hossain</b> . 1997. Hybrid Rice research in Bangladesh. Hybrid rice. 12(6), 26-27.
2	Full paper	Swapan K. Datta, Karabi Datta, Vilas Parkhi, Mayank Rai, Niranjan Baisakh, Gayatri Sahoo, Sayeda Rehana, Anindya Bandyopadhyay, <b>Md. Alamgir</b> , Md. S. Ali, Editha Abrigo, Norman Oliva, Lina Torrizo. 2007. Golden rice: introgression, breeding, and field evaluation. Euphytica 154:271-278.
3	Full paper	Khaleda Akter, M. K. Bashar, <b>M. A. Hossain</b> , and K. M. Iftekharuddaula. 2008. Gene action of yield contributing new plant type traits in rice ( <i>Oryza sativa L.</i> ). Genetics and Breeding. 37(1-2):31-43.
<b>(b) Other National and International Journal (As principal author)</b>		
4	Full Paper	<b>M. A. Hossain</b> and M G Rasul. 2002. Heterosis breeding: Concept and its exploitation in rice. Bangladesh J. Pl. Breed Genet, 15 (1):01-9.
5	Full Paper	<b>M. A. Hossain</b> and Enamul Haque. 2003. Genetic variability and path analysis in rice genotypes. Bangladesh J. Pl. Breed Genet. 16 (1): 33-37.
6	Full Paper	<b>M. A. Hossain</b> , M. A. K. Mian, M. G. Rasul and A. W. Julfikar 2005. Selection of the parents for two-line hybrid rice. Bangladesh J. Pl. Breed genet. 17 (1):01-07.
7	Full paper	<b>M. A. Hossain</b> and Enamul Haque. 2003. Line X tester analysis for identification of CMS and restorer lines in rice. Bangladesh J. Bot. 32(2): 71-75.

8	Full paper	<b>M. A. Hossain</b> Enamul Haque and Kamal Hossain. 2004 Genetic divergence and hybrid performance in rice, <i>The Agriculturists</i> <b>2(1): 111-116.</b>
9	Full paper	<b>M A Hossain</b> , M A Haque, M M Hossain, M H Kabir and M A A Bhuiyan. 2004. Stability analysis for Grain Yield in Irrigated Rice ( <i>Oryza Sativa L.</i> ), <i>The Agriculturists</i> 2(1): 29-33.
<b>Other National and International Journal (As co-author)</b>		
10	Full Paper	M. A. Salam, <b>M. A. Hossain</b> and S. Khatun. 1996. Combining ability for grain yield and its component in rice <i>Ann. Bangladesh Agric.</i> 6(1): 21-26.
11	Full Paper	M. A. Salam, H. U. Ahmed and <b>M. A. Hossain</b> . 1997. Advance rice genotypes for rainfed lowland drought prone environment in Bangladesh. <i>Bangladesh J. Pl. Breed Genet</i> , 10(1&2): 13-18.
12	Full Paper	A. W. Julfikar, <b>M. A. Hossain</b> T. H. Ansari and M. A. Islam. 1997. The augmented design as an aid to preliminary selection of new rice hybrids. <i>Bangladesh J. life sci.</i> 9(1):23-29.
13	Full paper	Enamul Haque, M. Akhlasur Rahman, <b>M. Alamgir Hossain</b> , M. A Salam, Mahiul Haque. 2000. Genetic Composition of BRRI Released Rice Varieties: Part II. <i>Bangladesh Rice J. Special issue.</i> Accepted.
14	Full paper	M.M. Hussain, <b>M. A. Hossain</b> , A. Saha, M. A. Salam and M. Rashid. 1998. Stability of grain yield and some other parameters in salt tolerant genotypes of rice. <i>Bangladesh Agron. J.</i> 8(1&2): 53-57.
15	Full paper	M.A. Haque, M.M.Husain, A.B.S. Sarker, D.E. Jharna and <b>M.A. Hossain</b> . 2003. Effect of dekamon, agrister gold, agrister jade on yield and yield components of rice. <i>The agriculturists.</i> 1(1): 1-6
16	Full paper	M. R. Zaman, <b>M A Hossain</b> , D.N R Paul, S. Kabir and M. Zakir Hossain. 2004 Character contribution to the divergence among BRRI-released boro varieties. <i>The Agriculturists.</i> <b>2(1): 141-145</b>
17	Full paper	M A T Masud, <b>M A Hossain</b> , S. R. Saha, Ali Muhammad and S. M. Hossain. 2003. Genetic divergence in Ridge ground. <i>Bangladesh J. Pl. Breed. Genet.</i> 16(2): 17-22.
18	Full paper	PS Biswas, MK Hossain, <b>M A Hossain</b> and M A Salam. 2008. Genetic Behavior of Grain Fe and Zn Content In Indica Rice. <i>Intl J. BioRes</i> 4(1):43-46
19	Full paper	Kamal Hossain, A. Akter, M. A. Rahman, M. H. Ali, and <b>M. A. Hossain</b> . 2009. Prediction of heterosis for yield and its component traits among hybrids of Line X Tester crosses in rice ( <i>Oryza sativa L.</i> ). <i>Eco-friendly Agril. J.</i> 2(2):494-498.
20	Full paper	M R Hasan, U Sarker, <b>M A Hossain</b> , KMK Huda, MAK Mean, T Hossain, MS Zahan, and MNH Mahmud. 2012. Genetic diversity in micronutrient dense rice and its implication in breeding program. <i>Eco-friendly Agril. J.</i> 5(09):168-174.

(b) Books/ Monograph/ Bulletins

1	Book (Translation)	A. W. Julfikar and <b>M. A. Hossain</b> . 2000. Hybrid dhaner beej utpadan nirdeshika(in Bangla). Bangladesh rice Research Institute, Gazipur-1701. pp.57.
2	Folder	<b>M. Alamgir Hossain</b> . 2003. BRRI Udbhabita Adhunik Dhaner Jat O Dhan

		Chasher Adhunik Projukti (in Bangla) Director General BRRI. BRRI Publication No 139.
3	Absrtract	A. W. Julfiquar, <b>M. A. Hossain</b> and M. Nasiruddin 1996. The augmented design as an aid to preliminary selection in rice hybrids. Abstracts, 4 <sup>th</sup> Annual Conference, Plant Breeding and genetics Society of Bangladesh. October 24. p. 1.
4	Absrtract	K. A. Kabir, S. S. Dipti, <b>Md. Alamgir Hossain</b> , 2002. Adaptive breeding for iron-dense rice in Bangladesh. Abstracts, International Rice Congress, Beijing, China, September 16-20. p.43.
5	Absrtract	<b>M. Alamgir Hossain</b> , K. Datta, M. Vasconcelos, J. Tan, N. Oliva, and S. K. Datta, 2005. Combination $\beta$ -carotene Biosynthesis and Ferritin Genes in Indica Rice. The Php. J. Crop Sci. Vol. 30(1)p:19

(c) Seminar/Workshop/sympogium proceedings

1	Proceedings	K. A. Kabir, M. Haque, <b>M. A Hossain</b> , S. S. Dipti. 2002. Breeding for iron-dense rice in Bangladesh. <i>In</i> : Nanna Roos, Howarth E. Bouis, Nazmul Hassan, and Khandaker Aminul Kabir, editors. Proceedings of the Workshop on Alleviating Micronutrient Malnutrition through Agriculture in Bangladesh: Biofortification and Diversification as Long-Term, Sustainable Solutions, Gazipur and Dhaka, Bangladesh April 22–24. International Food Policy Research Institute, Institute of Nutrition and Food Science, University of Dhaka and Bangladesh Rice Research Institute. Pp 35-39
2	Proceedings	K. A. Kabir, M. Haque, <b>M. A Hossain</b> , S. S. Dipti, and I. Tetens. 2003. Breeding for iron-dense rice in Bangladesh. <i>In</i> : Mew TW, Brar DS, Peng S, Dawe D, Hardy B, editors. Rice Science: innovation and impact for livelihood. Proceedings of the International Rice Research Conference, 16-19 September 2002, Beijing, China. Beijing (China): International Rice Research Institute, Chinese Academy of Engineering, and China Academy of Agricultural Science. pp 397-402.
3	Proceedings	Swapan Datta, Vilas Parkhi, Mayank Rai, Jing Tan, Niranjana Baisakh, Lina Torrizo, Editha Abrigo, Norman Oliva, <b>Md. Alamgir Hossain</b> , Russel Julian, Anindya Bandyopadhyay, and Karabi Datta. 2005. Golden Rice and improvement of human nutrition. Toriyama K, Heong KL, Hardy B, editors. Rice is life: scientific perspectives for the 21st century. Proceedings of the World Rice Research Conference held in Tokyo and Tsukuba, Japan, 4-7 November 2004. Los Baños (Philippines): International Rice Research Institute, and Tsukuba (Japan): Japan International Research Center for Agricultural Sciences. CD. pp99-102