

Research Interests

Irrigation and water management, soil hydrology, conservation agriculture.

Education

Kyoto University, Japan	PhD	Agricultural science	2020	-
Gifu University, Japan	M.S.	Agriculture and Environmental Sciences	2016	3.91
Bangladesh Agricultural University	M.S.	Irrigation and Water Management	2013	3.61
Bangladesh Agricultural University	B.Sc.	Agricultural Engineering	2011	3.62
Govt Azizul Haque College, Bogra	Highe	r Secondary School Certificate	2006	5.00

Present job

Deputy Director, Rural Development Academy (RDA), Bogra-5842, Bangladesh

Ministry of Local Government, Rural Development & Co-operatives of the Bangladesh Government Phone: +8805151001, Website: <u>www.rda.gov.bd</u>

Division: Project Planning and Monitoring

Role: Project writing, DPP preparation, project reporting, project evaluation and field monitoring.

Professional Experience and activities

Deputy Director	Rural Development Academy (RDA), Bangladesh	7.9/2019~
Unit in charge	Irrigation and farm machinery unit at RDA, Bogra	11/2020~
Unit in charge	Engineering section at RDA, Bogura	23.3.21~
Member-secretary	Media Cell of RDA	10/2021~
Member-secretary	Innovation team of RDA	09/2021~
Protocol officer	Worked at Protocol officer (additional duty) at RDA, Bogura	12/2020-3/2021
Assistant Director	Rural Development Academy (RDA), Bangladesh	2013~2019
Assistant Project Director	Action Research Project on "Construction of Co-operative based Multistoried 'Palli Janapad' Housing with Modern Urban Amenities for Livelihood Improvement of the Rural People.	2016-2017
Assistant Project Director	Establishment of Rural Development Academy at Jamalpur	2016 - 2017
Research Assistant	Laboratory of Water Resources Environment, Gifu University, Japan	2014 - 2016
Unit in charge	Biogas, Irrigation and farm machinery unit at RDA, Bogura	2016 - 2017
Researcher	Hydrological Environment Engineering Laboratory, Kyoto University, Japan	2017-2020

Language skills

Language	Understanding	Speaking	Writing
English	Excellent	Good	Good
Bengali	Excellent	Excellent	Excellent
Japanese	Good	Fair	Basic

Scholarship and Awards

1.	Water and Environmental	l leadership scholarshi	p from River Basin	Research Center,	Gifu University	2014
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2. The Kubota Fund scholarship awarded by Kubota International Scholarship Foundation, Japan 2015

3. The Kubota Fund scholarship awarded by Kubota International Scholarship Foundation, Japan 2016

4. Japanese Government (MEXT) Scholarship for doctoral program at Kyoto University, Japan2017

5. Indian Technical & Economic Cooperation Programme (ITEC) fellowship for a short course 2017

training program at NIRD, India

Computer tools

R Statistical Package, HYDRUS software, Visual Basic programing (VBA), C sharp, and SPSS.

Professional memberships

- American Society of Agricultural and Biological Engineers (ASABE); Membership No: 1052046
- International Soil Tillage Research Organization (ISTRO). Certificate No. 993
- Institute of Engineers Bangladesh (IEB)
- Krishibid Institution of Bangladesh (KIB)

International training

- Participated an International training program on Planning and management of sustainable housing and habitat development at the National Institute of Rural Development (NIRD), Hyderabad, India from 01-08-2017 to 28-08-2017.
- Participated a conference of 21st International Soil Tillage Research Organization (ISTRO) in Paris France from 24- 27 September 2018.

Training and certificate received

- Participated Public Service Innovations training during 23-27 April, 2017 offered by Rural Development and Cooperative Division of the Ministry of Local Government, Rural Development & Co-operatives, Bangladesh.
- Successfully completed training course on "Preparation of Reports and Writing Ups" during 06-10 November 2016 from Bangladesh Society for Training and Development (BSTD), Dhaka, Bangladesh.
- Participated 45th special foundation training course for 2 months (10 February -10 April 2014) from Rural Development Academy (RDA), Bogra, Bangladesh.
- Successfully completed six months training course on "Basics of MS Office" from Department of Social Services Ministry of Social Welfare Urban Community Development Project, Bogra, Bangladesh.
- Successfully completed the course on "Data Analysis: MSTATC and SPSS" from Graduate Training Institute (GTI), Bangladesh Agricultural University, Mymensingh.

Conference Presentations

- Mulches effects on soil water environments under effective rainfall on soybean (Glycine max). 4th UGSAS-GU International Symposium 2015 in Gifu University, Japan.
- Effects of plastic-hole mulching on effective rainfall and readily available soil moisture under soybean (Glycine max) cultivation. 5th UGSAS-GU International Symposium 2016 in Gifu University, Japan.
- Modelling effects of straw mulching on soil water and temperature regimes in rain-fed soybean field of central Japan. 21st ISTRO conferences 2018 in Paris, France. https://www.istro.org/index.php/publications/proceedings/55-istro-2018-proceedings-paris-france/file
- Modeling of water and heat flow in mulched soil under rain-fed soybean cultivation. 68th Japanese Society of Irrigation, Drainage and Rural Engineering (JSIDRE) conference during 4-6 September 2019 at the Tokyo University of Agriculture and Technology, Japan. http://soil.en.a.utokyo.ac.jp/jsidre/search/PDFs/19/T-14-2.pdf
- Leaf water potential estimation of mandarin orange tree based on multiple regression and soilplant-atmosphere continuum models. 2019 Seoul INWEPF & PAWEES International Conference during 5-7 November 2019 at InterContinental Seoul COEX, South Korea.

Internship

• Successfully completed the internship on Japanese waste water treatment technology from Gifu prefectural environmental management and technology center, Japan during 7-11 September, 2015.

Academic Thesis

Undergraduate	Hydrophobic effects of oily water on some soil properties.
Masters 1	Climate change and its impacts on actual crop evapotranspiration of boro rice in north-
	west hydrological region of Bangladesh.
Masters 2	Mulching material effects on soil moisture and temperature of soybean (Glycine max)
	under effective rainfall.
Doctor	Effectiveness of various types of mulching on soil moisture and temperature regimes
	under rainfed soybean cultivation. http://hdl.handle.net/2433/259050

Reviewed peer-review journals

- Outstanding reviewer award from Agricultural and Forest Meteorology journal, Netherland.
- International Journal of Soil and Tillage Research, Netherland.
- International Journal of Agricultural Water Management, Netherland.
- Irrigation science
- Environmental Management; Ecological Engineering (Elsevier)
- Plant and Soil; Paddy and Water Environment (Springer)

Journal Management

- Editorial member-secretary (October 2021-Till now): Bangladesh Rural Development Studies (Journal) published from Rural Development Academy, Bogura.
- Appointed Peer Reviewers (July 2020-Till now): SAINS TANAH -Journal of Soil Science and Agroclimatology published by Universitas Sebelas Maret, Indonesia in collaboration with Indonesian Soil Science Society.

Teaching experiences

- Farm Mechanization in Water Management: Undergraduate class lecture, Faculty of Agriculture, Sebelas Maret University, Indonesia. Link (<u>https://www.youtube.com/watch?v=3Gd9vDunHlc</u>).
- Cost-effective deep tube well (borehole) and its multipurpose uses for sustainable development. International training lecture class by AARDO on 28 September 2021.
- Keynote presenter on the session of Regional Development and Rural Planning for Balanced Development in the International Conference on Urban and Regional Planning (ICURP) 2021 Organized By Bangladesh Institute of Planners (BIP) in 1 Nov. 2021.
- Farm machinery, irrigation, and Water Management course for the students of Post-Graduate Diploma of Rural Development (PGDRD) at RDA, Bogura (Autumn semester).

Research supervisor

1. Ameena Mussadika (Thesis co-supervisor)

Masters' student under Determent of Irrigation and water management, Bangladesh Agricultural University, Mymensingh, Bangladesh. Time frame: 1 December 2021- Till now.

2. Md. Ashraful (Research main supervisor)

Masters' student under Determent of Irrigation and water management, Sylhet Agricultural University, Sylhet, Bangladesh. Time frame: 1 February 2022- Till now.

3. FARHANA AKTER MITU (Research main supervisor)

Masters' student under Determent of Irrigation and water management, Sylhet Agricultural University, Sylhet, Bangladesh. Time frame: 1 February 2022- Till now.

4. Shibli Sadik Tulip (Research associate), Time frame: 1 November 2020- June 2021 Presently doing masters at North Dakota State University, USA

Current research projects

1. Precision of irrigation water under plastic mulching and conservation tillage for upland crop cultivation

As we know, application of plastic mulches in potato production is rarely used by farmers in Bangladesh although it has a good prospect for saving irrigation water, weed control, maintaining tuber quality, and increasing yield. In this study, we set a series of field experiment to evaluate the precision of irrigation water for potato production using different colored plastic mulches i.e, black and blue in combination with conservation strip tillage and control (no-mulch). The results of the study will help to improve the understanding of potato growers for adopting best mulch management as well as precision of irrigation water.

2. Assessment of soil and water management practices in sandbar cropping system for producing pumpkin in riverine areas of Bangladesh

Bangladesh is a riverine country and around 270 rives passes in the whole country. The char lands in the river systems are largely composed of coarse sands, often aided by silts through annual inundation. In this way, saving irrigation water in sandy soil by plastic mulching and soil pits may gives higher productivity of crops. However, the effects of plastic mulching and soil physio-chemical analysis on sandbar cropping system is remain uncertain and need to further deep investigations.

3. Performance evaluation of RDA-developed water and waste management system in RAJUK, Dhaka

RDA-Developed solid waste treatments installed in RAJUK, Dhaka but the system needs to be observed in terms of water quality and economic viability. In this study, we will investigate the water quality parameters and ground water recharging through the building rainwater and analyze how the system works well. Therefore, combining the water, energy and environmental aspect in RAJUK project, a brief research study may need to observe to quantify the performance evaluation the RDA-developed system.

4. Design and implementation of cost-effective rural housing using stone materials

Bangladesh is a developing country where most of its people live in the urban areas. Therefore, alternate construction materials need to find considering environment aspects, cost-effectiveness, and easy availability. This study will find to make a cost-effective rural infrastructure to develop a model house for the poor people of Bangladesh, and to evaluate of all characteristics of building wall and compare the performance with traditional bricks wall for rural housing in Bangladesh.

List of Publications

1. **Kader, M.A**.^{*}, Nakamura, K., Senge, M., and Mojid, M.A., Two-dimensional numerical simulations of soilwater and heat flow in a rainfed soybean field under plastic mulching, Water Supply, March **2021**. <u>https://doi.org/10.2166/ws.2021.095</u>

2. Tabriz S.S, **Kader M.A.***, Sanowar H., and Awal M.A., Prospects and challenges of conservation agriculture in Bangladesh for sustainable sugarcane cultivation, Environment, Development and Sustainability, March **2021.** <u>https://doi.org/10.1007/s10668-021-01330-2</u>

3. **Kader M.A.**^{*}, Nakamura K., Senge M., Mojid M.A., and Kawashima S., Effects of coloured plastic mulch on soil hydrothermal characteristics, growth and water productivity of rainfed soybean, Irrigation and Drainage, 69, 483-494, July **2020**. <u>https://doi.org/10.1002/ird.2431</u>

4. Kader M.A., Nakamura K.*, Senge M., 特集 令和元年度 農業農村工学会畑地整備研究部会 企画セッション報告 (1/3) 天水条件下のマルチ被覆ダイズ栽培土壌中の水・熱移動解析 畑地農業振興会, 21-24 (In Japanese language), 2020. <u>https://ci.nii.ac.jp/naid/40022150923</u>

5. **Kader, M.A**.^{*}, Nakamura, K., Senge, M., Mojid, M.A., and Kawashima S., Soil hydro-thermal regimes and water use efficiency of rain-fed soybean (Glycine max) as affected by organic mulches, Agriculture Water Management, 223, 88-98, August **2019**. <u>https://doi.org/10.1016/j.agwat.2019.105707</u>

6. **Kader, M.A**.^{*}, Nakamura, K., Senge, M., Mojid, M.A., and Kawashima S, Numerical simulation of waterand heat-flow regimes of mulched soil in rain-fed soybean field in central Japan, Soil and Tillage Research, 191, 142-155, April **2019**. <u>https://doi.org/10.1016/j.still.2019.04.006</u>

7. **Kader, M. A.***, Senge, M., Mojid M.A. and Nakamura, K., Mulching type-induced soil moisture and temperature regimes and water use efficiency of soybean under rain-fed condition in central Japan, International Soil and Water Conservation Research, 5 (4), 302-308, December **2017**. <u>https://doi.org/10.1016/j.iswcr.2017.08.001</u>

8. **Kader, M.A.,** Senge, M.^{*}, Mojid, M. A., Ito, K., and T. Onishi, Effects of plastic-hole mulching on effective rainfall and readily available soil moisture under soybean (Glycine max) cultivation, Paddy and Water Environment, 15 (3), 659-668, March **2017**. <u>https://doi.org/10.1007/s10333-017-0585-z</u>

9. **Kader, M. A.,** Senge, M.^{*}, Mojid, M. A., and Ito, K., Recent advances in mulching materials and methods for modifying soil environment, Soil and Tillage Research, 168, 155–166, January **2017**. <u>https://doi.org/10.1016/j.still.2017.01.001</u>

10. **Kader, M.A.**^{*}, Singha, A., Begum, M. A., Jewel, A., Ferdous, H. K., and Nazrul, I. K., Mulching as watersaving technique in dryland agriculture: review article, Bulletin of the National Research Centre, 43, 148, October **2019**. <u>https://doi.org/10.1186/s42269-019-0186-7</u>

11. Sinha, S.R., Singha, A.*, Faruquee, M., Jiku, M.A.S., Rahaman, M.A., Alam, M.A., and **Kader, M.A.**, Post-harvest assessment of fruit quality and shelf life of two elite tomato varieties cultivated in Bangladesh, Bulletin of the National Research Centre, 43(1), 185, November **2019**. https://doi.org/10.1186/s42269-019-0232-5

12. **Kader, M. A**., Karim N. N.^{*}, and Mojid M. A., Climate change impacts on crop evapotranspiration of boro rice in Rangpur division of Bangladesh, Bangladesh Journal of Agriculture, 38-40 (5), 17-29, January **2016**.

13. Mojid, M. A.^{*}, **Kader, M. A.**, and Karim, N.N., Impact of climatic variation on reference crop evapotranspiration in the north-east hydrological region of Bangladesh, Advances in Environmental Research (Book chapter), Nova Science Publishers, Inc., 25 (2), 51-74, July **2016**.

14. Islam, M.T.^{*}, and **Kader M. A.**, Choice of efficient centrifugal pump for minor irrigation scheme, International Journal of Multidisciplinary Research and Development 2 (4), 19-23, April **2015**.

15. **Kader M.A**.^{*} & Rannu R. P. (2015). Hydrophobic effects of oily water on some soil properties. Bangladesh Rural Development Studies 17 (1), 89-100.

16. **Kader, M. A**., Karim N.N.^{*}, and Mojid M. A., Impact of climate change on actual crop evapotranspiration of boro rice in Rajshahi division, Journal of Agricultural Engineering, 41 (2), 24-33, December **2014**.

17. **Kader, M.A.***, Khan, F.H., Tulip, S.S., Mridha, M.A.H., and Jewel, A., Applicability of plastic mulch and conservation strip tillage for potato production in Bangladesh. SAINS TANAH - Journal of Soil Science and Agroclimatology, 18(2), 115-125. **October 2021**. doi:http://dx.doi.org/10.20961/stjssa.v18i2.53559

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Book Chapter

• Mojid, M. A., **Kader, M. A**., Karim, N.N., (2016). Impact of climatic variation on reference crop evapotranspiration in the north-east hydrological region of Bangladesh. Advances in Environmental Research. Nova Science Publishers, Inc., 25 (2): 51-74.

Upcoming Publications

- RDA-developed cost-effective borehole technology for utilizing ground water resources in rural Bangladesh. Hydrological Research Letter (Under review).
- Soil water consumption and leaf water potential as affected by mulch-drip irrigation system for producing high-quality mandarin orange (Citrus unshiu) in Wakayama Prefecture of Japan (editing).
- Soil thermal environments as affected by plastic mulching in an orange tree (editing).