

## Division of Land and Water Management

### Personal Details



**Dr A. Rahman**  
**Principal Scientist (Physics)**

Address : ICAR Research Complex for Eastern Region, P.O.  
Bihar Veterinary College, Patna 800014 (Bihar)

Email-ID : [rahman\\_patna@yahoo.co.in](mailto:rahman_patna@yahoo.co.in)

### Research Interest

Solar energy applications in agriculture and allied activities, Pressurised Irrigation Technologies, Dielectric Properties of Agricultural produce

### Research Highlights

Development of solar system models for groundwater pumping for different land holdings, system sizing under conventional and pressurised irrigation options; solar energy applications in fisheries to maintain dissolved oxygen concentration; solar energy applications in animal husbandry such as watering, washing and maintaining appropriate micro climatic conditions in animal sheds; design and development of prototype nozzles for field and row crops under low operating pressure condition; investigation on dielectric properties of seeds and grains at radio frequency and microwaves for drying and quality control.

### Memberships / Fellowships

Life member: Society for up-liftment of Rural Economy (SURE), Varanasi

### Technology Developed

- Solar energy groundwater pumping and irrigation models for small farms
- Low energy rotary nozzle (LERN) for field crops irrigation.
- Solar energy operated humidifier for improving micro climate in animal shed
- Low energy water application device (LEWA) for smallholders irrigation
- Solar aerator for improving dissolved oxygen concentration in fishpond

### Publication Details

#### Research Paper

1. **Rahman, A.** and A.K. Singh. 2014. A simple low-cost water sprinkling nozzle for field crop irrigation. *Current Sci.* 107(1): 22-25.
2. **Rahman, A.** Low Energy Rotary Nozzle: An Energy and Water Saving Device for Field Crop Irrigation. *J. Agr. Sci. Tech. (2015) Vol. 17: 1071-1082.*
3. Atul Kumar Singh, **A. Rahman**, S. P. Sharma, A. Upadhyaya and A.K. Sikka. **2009**. Small Holders' Irrigation-Problems and Options. *Water Resource Management.*

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4. Singh A. K., S. P. Sharma, A. Upadhyaya, **A. Rahman** and A.K. Sikka. **2010**. Performance of Low Energy Water application Device. *Water Resource Management* 24:1353-1362. DOI 10.1007/s 11269-009-9502-6
5. **Rahman, A.**, and B. P. Bhatt. Design Approach for Solar Photovoltaic Groundwater Pumping System for Eastern India. 2014. Design approach for solar photovoltaic ground water pumping in Eastern India. *Current World Environment*. 9(2): 426-429.
6. Chandel, V. S., **A. Rahman**, J. P. Shukla and R. Manohar. 2012. Effect of fungicide treatment on dielectric properties of few coarse- cereals over the frequency range 0.01 to 10 MHz. *Walailak J Sci & Tech* ; 9(3): 217-227.
7. **Rahman, A.**, and J.P. Shukla. 2006. Dielectric Properties of vegetable seeds in the frequency range of 0.01 to 10MHz. *International Journal of Tropical Agriculture*, 24(2):
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9. Rahman S. and **A. Rahman**. 2010. Population Dynamical Model for AIDS Patient of a Particular Area. *Selcuk Journal of Applied Mathematics, Turkey*. Vol.11 No.2 pp.3-11
10. **Rahman, A.** and B.P. Bhatt. 2017. A Solar System model for Small Farm. *Journal of Environment and Life Sciences*. 10 (10):812-815.
11. **Rahman, A.** and B.P. Bhatt. 2017. Solar energy groundwater pumping: Sustainable solutions to energy squeeze in smallholders' Irrigation in India. *Journal of AgriSearch*, 4(4):294-297. doi.10.21921/jas.v4i04.10213
12. **Rahman, A.** and B.P. Bhatt. 2017. Scope and Options of Solar Energy Use in Agriculture in Eastern region of India. *Journal of AgriSearch*, 4(1):76-79. doi. 10.21921/jas.v4i1.7425
13. Monobrullah M., **A. Rahman** and R. Kumar. **2018**. Solar energy groundwater pumping: A case study in East Champaran, Bihar. *Multilogic in Science*. Vol. 3, pp: 175-177.
14. Rahman A. and B. P. Bhatt. Scope of solar energy groundwater pumping in Eastern india. 2014. *Eco Scan*, 8(1&2): 121-125
15. Prem K Sundaram, A Rahman, A. K Singhand **Bikash Sarkar**, 2021. A new prototype manual weeder for row crops. *The Indian Journal of Agricultural Sciences (In Press)*.
16. Atul Kumar Singh, Adlul Islam, S.R. Singh, Ashutosh Upadhyaya, A. Rahman and A.K. Sikka. 2015. Low Energy Water Application (LEWA) device: Concept and applications. *Journal of Soil & Water Conservation* 14(4): 344-351, October-December 2015. ISSN: 0022-457X
17. Sarkar B, P K Sundaram, A P Anurag, R Kumar, Ujjwal Kumar, **A Rahman** and A Upadhyaya. 2021. Ergonomic Evaluation of Hand Operated Maize Sheller for Reducing Drudgery of Farm Women in Bihar. *Journal of AgriSearch*, 8 (1): 30-34
18. Sarma K., **A. Rahman** and A. Dey. 2018. Impact of solar operated aerator on dissolved oxygen and fish growth. *J. Exp. Zool. India*. 21(2), pp: 1041-1046.

19. **Rahman, A.**, Upadhyaya and B.P. Bhatt. 2018. Treadle pump: A low cost irrigation option for marginal farmers. *Journal of AgriSearch*, 5(2):200-202. doi. 10.21921/jas.5.3.10
20. **Rahman A.** , B. Sarkar, Ajay Kumar, K. Sarma, A. Dey and A. Upadhyaya.2020. Solar photovoltaic technology options for smallholders. *Journal of Natural Resource Conservation and Management* Vol. 1, No. 1, pp 48-53, 2020
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22. Singh, A.K., Kumar, A., **Rahman, A.**, Sundaram, P.K., and Upadhyaya, A. 2019. Evaluation of faba bean based crop diversification in Eastern India. *Indian Journal of Horticulture*, 76(4): 707-713
23. **Rahman A.**, A.K. Singh and A. K. Sikka. 2008. *Importance of small Farm holders, their limitations and Opportunities to adopt efficient Irrigation Technologies.* Agricultural Situation in India. Vol 3: pp: 479-484.
24. Khan A.R, **A.Rahman**, and R.D.Singh. "Influence of soil surface manipulation on soil temperature in relation to peanut production. *Journal of Applied and Natural Sciences* 5(1): ISSN 0974-9411 Page 24-28.

#### **Book Chapter**

1. **A. Rahman.**Conservation Agriculture mitigating Climate Change Effects & Doubling Farmers' Income. 2018. Pp:156-161. ISBN: 978-81-937063-4-3. ICAR RECER Publication
2. **Rahman A.** and B.P. Bhatt. Solar Photo Voltaic System for Groundwater Pumping". In "Status of Agricultural Development in Eastern India. 2012, pp: 407-415.ICAR RECER Publication
3. Mukarrjee, J. **A. Rahman** and Adlul Islam. Weather and Climate. In "Status of Agricultural Development in Eastern India.2012, pp. 3-15.ICAR RECER Publication
4. Islam Adlul, S. K.Barari, **A. Rahman** and J. Mukherjee. Status of Natural resources. In Status of Agricultural Development in Eastern India".2012.pp:33-47. ICAR RECER Publication