

## Hope Njuki Nakabuye

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### EDUCATION

**University of Nebraska – Lincoln (UNL), Nebraska, USA** **June 2018 – May 2022**  
PhD., Biological Engineering (Irrigation Engineering)

GPA: 3.83/4.00

Dissertation topic: Local calibration of irrigation scheduling techniques in semi -arid environments under subsurface drip systems

**Bidhan Chandra Krishi Vishwavidyalaya (BCKV), West Bengal, India** **August 2013 – July 2015**  
Master of Technology (Agriculture Engineering) in Soil and Water Engineering

GPA: 8.74/10

Thesis: Estimation of Crop Water Stress and Scheduling Irrigation using Canopy Temperature

**Busitema University (BU), Tororo, Uganda** **October 2007- May 2011**

Bachelor of Agricultural Mechanization and Irrigation Engineering, GPA: 3.84/5.00

Thesis: Design of a Drip Irrigation System for Cabbages in Akwera Village

### RESEARCH EXPERIENCE

**University of Nebraska – Lincoln (UNL), Nebraska, USA**

**Graduate Research Assistant UNL West Central Research, Education and Extension Center June 2018 – present**

- Sensor installation and data collection from field research plots. Datasets included soil moisture canopy temperature and microclimate parameters.
- Managed day to day running of subsurface drip irrigation system for over 200 research zones as well as participating in uploading of irrigation and fertigation prescriptions on center pivot systems.
- Scheduled weekly irrigation decisions for maize and soybeans based off soil water content, evapotranspiration models and canopy temperature
- Mentored undergraduate student interns in the area of irrigation water management
- Participated and presented at extension activities such as field days
- Regularly communicated with industry partners field sensor functioning and repair requirements

**Bidhan Chandra Krishi Vishwavidyalaya (BCKV), West Bengal, India**

**Graduate scholar** **August 2013 – July 2015**

- Conducting laboratory experiments to assess different soil physical properties
- Assessing field variation of Mung bean canopy temperatures for irrigation scheduling
- Field and green house experimental design and data collection skills acquired

**Busitema University (BU), Tororo, Uganda**

**Teaching assistant** **August 2007 – July 2013**

- Designed and supervised of undergraduate irrigation agronomy field experiments
- Reviewed undergraduate final year design projects

## **TEACHING AND MENTORING EXPERIENCE**

**University of Nebraska – Lincoln, Lincoln, NE**

**Graduate Teaching Assistant, Biological Systems Engineering Department August 2019 – December 2019**

- Instructed the AGEN 453 Irrigation and Drainage Systems course for undergraduate students
- Graded homework and examinations for the AGEN 453 Irrigation and Drainage Systems course

**Busitema University, Tororo, Uganda**

**Lecturer, Water Resources Engineering Department January 2016 – May 2018**

- Instructed undergraduate students in the AMI 3203 Irrigation Agronomy and WAR 2103 Hydrology 1 courses
- Developed course material for the AMI 3203 Irrigation Agronomy and WAR 2103 Hydrology 1 courses and contributed to the curriculum review of the Water Resources Engineering program
- Served as a departmental examination program coordinator

**Busitema University, Tororo, Uganda**

**Teaching Assistant, Faculty of Engineering August 2007 – July 2013**

- Provided remedial teaching and tutorials to students in the AMI 3203 Irrigation Agronomy and AMI 4101 Irrigation System Design and Management courses
- Graded homework and examinations for the AMI 3203 Irrigation Agronomy and AMI 4101 Irrigation System Design and Management courses

## **INTERNSHIPS**

**Ministry of Water and Environment, Directorate of Water Development, Uganda**

**Intern June 2010 – August 2010 and January 2011 – February 2011**

- Contributed to the design review of structural plans for the Akwera dam construction project
- Participated in various on site survey and earth works as well as laboratory material testing
- Participated in various stakeholder meetings to discuss the Akwera dam construction progress

**Agricultural Engineering and Appropriate Technology Research Center (AEATREC), Uganda**

**Intern May 2009 – August 2009**

- Welding and fabrication of assorted prototype agriculture tools and machines
- Participated experimental drip and sprinkler systems installations fed by harvested rain water
- Participated in extension activities to demonstrate the operation of fabricated farm machinery

## **INTERESTS AND SKILLS**

### **Research Interests**

Sustainable irrigation water management, infrared radiometry and thermal imagery, deep learning applications in precision agriculture, field experimental design and data collection

### **Skills**

Microsoft Excel Visual Basic (VBA) and Python Programming, CRBasic datalogger programming for analog and digital sensor connections and communication, Neutron gauge and other soil moisture sensor data collection, Microsoft office suite, Multiple sensor deployment and troubleshooting errors.

## **PUBLICATIONS**

### **In preparation**

**Nakabuye H.N**, Rudnick D.R, Lo T.H, DeJonge K.C, Hereen D, Qiao X, Trenton F, Katimbo A, Duan J. Field performance of irrigation scheduling methods in subsurface drip irrigated maize under semi-arid environments

**Nakabuye H.N**, Rudnick D.R, Lo T.H, DeJonge K.C, Katimbo A, Duan J. Machine learning algorithms for modeling upper and lower canopy temperature baselines in maize and soybeans

### **Published**

Lo T, Rudnick D.R., Singh J, **Nakabuye H.N**, Katimbo A, Heeren D.M, Ge Y. 2020a. Field Assessment of inter-replicate variability from eight electromagnetic soil moisture sensors. *Agricultural Water and Management*. Volume 231,31. <https://doi.org/10.1016/j.agwat.2019.105984>

Lo T, Rudnick D.R, DeJonge K.C, Bai G, **Nakabuye H.N**, Katimbo A, Ge Y, Franz T.E, Qiao X, Heeren D.M. 2020b. Differences in soil water changes and canopy temperature under varying water x nitrogen sufficiency for maize. *Irrigation Science*. 38:519-534. <https://doi.org/10.1007/s00271-020-00683-2>

### **Poster Presentations**

**Nakabuye H.N**, Lo T, Rudnick D.R. 2019. Assessment of locally calibrated irrigation scheduling methods in West Central Nebraska. Annual Global Water for Food Conference. April 29 – April 30, 2019, Lincoln, Nebraska.

### **Oral Presentations**

**Nakabuye H.N**, Lo T, Katimbo A, Rudnick D.R. 2020. Comparing irrigation scheduling techniques in subsurface irrigated corn in West Central Nebraska. UNL College of Engineering Graduate Student Symposium. February 21, 2020.

**Nakabuye H.N**, Lo T, Rudnick D.R. 2019. Soybean response to subsurface drip irrigation in West Central Nebraska. 2019 ASABE Annual International Meeting. July 7 – July 10, Boston, Massachusetts.

### **Conference Proceedings**

**Nakabuye H.N**, Lo T, Rudnick D.R, Nickel J, Dorr T. 2019. Performance of locally calibrated irrigation scheduling techniques in West Central Nebraska. 31st Annual Central Plains Irrigation Conference. Feb. 26 – Feb. 27, 2019, Kearney, Nebraska.  
Available at: <https://www.ksre.kstate.edu/irrigate/oow/p19/Nakabuye19.pdf>

### **Extension presentations**

**Nakabuye H.N**, Rudnick D.R, Katimbo A, Duan J, Dorr T. Canopy temperature derived indices for irrigation water management in semi-arid climates. Presented at the UNL Graduate Research Assistant UNL West Central Research, Education and Extension Center field day on August 26, 2021

**Nakabuye H.N**, Rudnick D.R, Proctor C, Katimbo A, Duan J, Ferreira V, Nyssen B, Dorr T. Applications of Degrees Above Non-Stressed temperature index in crop water stress monitoring in semi-arid climates. Presented at the Brazile Groundwater Management Project field day in Creighton, NE on September 9, 2021

## **HONORS AND AWARDS**

- Research Assistantship: Department of Biological Systems Engineering, University of Nebraska – Lincoln. June 2018 – present
- Graduate Student Conference Travel Fellowship by College of Engineering University of Nebraska – Lincoln, Nebraska. \$500. 2019.
- Elenore Gakemeier Student Travel Award Student Travel Award. \$500. 2019
- Indian Council of Cultural Relations Africa Scholarship. August 2013 – July 2015
- Government of Uganda Undergraduate Student Scholarship. October 2007 – May 2011
- Winner, Nabisunsa Girls’ speech contest, 2004.

## **COMMUNITY SERVICE AND LEADERSHIP**

- College of Agricultural Sciences and Natural Resources Graduate Student Representative, BSE Department 2020 - present
- Vice President – Busitema University Student’s Guild 2010 – 2011
- Faculty of Engineering Student Representative 2010 – 2011
- Student Representative Busitema University Senate 2010 – 2011
- Member of Busitema University Ceremonies Committee 2010
- Assistant Treasurer Busitema University Christian Union 2009 – 2010
- Nabakyala Baganda Nkobazambogo Cultural Students Association 2009 – 2010
- Vice Chairperson Busitema University Christian Union 2008-2009
- Class Representative Agricultural Mechanization and Irrigation Engineering 2007 – 2011
- Speech Prefect Nabisunsa Girls’ School 2005 - 2006

## **PROFESSIONAL AFFILIATIONS**

- 2018 – present American Society of Agricultural and Biological Engineers (ASABE)
- 2018 – present African Network Group, American Society of Agricultural and Biological Engineers (ANGASABE)
- 2019 – present American Society of Agronomy (ASA)
- 2019 – present Soil Science Society of America (SSA)
- 2020 – present International Commission on Irrigation & Drainage