

Bibek Acharya

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PROFESSIONAL SUMMARY

Dedicated and passionate researcher in agricultural engineering with a specialized focus on water management. Skilled in employing a multidisciplinary approach that integrates process-based modeling, remote sensing, and machine learning techniques. Proven track record in developing and applying advanced methodologies to address complex water quantity and quality challenges, including evapotranspiration, water use efficiency, crop water production functions, and solute transport. Extensive experience in the Texas High Plains, Southwest Kansas, North Florida, and the Big Horn Basin, Wyoming. Committed to translating academic research into practical, community-focused solutions that enhance agricultural productivity and sustainability.

EDUCATION

University of Florida August 2020–August 2024

Degree: **Doctor of Philosophy**, Major: Agricultural and Biological Engineering

Ph.D. Dissertation: Assessing Nitrogen and Water Transport in a Rotational Production System: Monitoring and Modeling for Water Quality Management

University of Wyoming

August 2018–August 2020

Degree: **Master of Science**, Major: Plant Sciences

M.S. Thesis: Quantification and Mapping of Crop Evapotranspiration using Remote Sensing-based Surface Energy Balance Models

Tribhuvan University

August 2013–August 2017

Degree: **Bachelor of Science**, Major: Agriculture

B.S. Project: Nitrogen level and irrigation interval on mitigating Stemphylium blight and downy mildew in onion

PROFESSIONAL EXPERIENCE

Texas A&M AgriLife Research

Vernon, Texas

Postdoctoral Research Associate [PI: Dr. Srinu Ale]

September 2024–Present

- Calibrate and evaluate the DSSAT-CERES-Maize model for the Texas High Plains to enhance corn water use efficiency.

- Calibrate and evaluate the DSSAT-CSM-CROPGRO-Cotton in the Texas High Plains and Southwest Kansas to refine cotton production recommendations and develop crop water production functions for these regions.

University of Florida

Gainesville, Florida

Graduate Assistant [PI: Dr. Vivek Sharma]

August 2020–May 2024

- Executed crop growth and hydrological models such as DSSAT, HYDRUS and SWAT as well as machine learning models through python programming to solve water quality issues in North-Florida.
- Coordinated in installation of irrigation system, soil moisture sensor, lysimeter and performed lysimeter sampling, soil sampling, plant tissue sampling, soil moisture monitoring and plant canopy monitoring as part of precision water and nutrient management under the supervision of Dr. Vivek Sharma.
- Trained visiting scholars at the University of Florida and students from the Punjab Agricultural University in India on quantifying crop evapotranspiration using Landsat images.

Teaching Assistant

August 2022–December 2022

- Course: ABE 3212C, Irrigation and Drainage Engineering
- **Responsibilities:** In my role as a Teaching Assistant, I taught 3 credits on Crop Evapotranspiration and provided technical support to ensure the seamless operation of classes.

University of Wyoming

Powell, Wyoming

Graduate Assistant [PI: Dr. Vivek Sharma]

July 2018–August 2020

- Executed remote sensing-based evapotranspiration models such as METRIC, SEBAL, SEBS, and S-SEBI through ERDAS Imagine and ArcGIS to quantify regional to field level crop evapotranspiration in Big Horn Basin, Wyoming.
- Coordinated in various extension programs, interacted with, and worked alongside growers, extension specialists, and educators hosted at Powell and Lingle, Wyoming.

Human Rights Association Center Nepal

Rolpa, Nepal

Livelihood officer

August 2017–December 2017

- Coordinated equity access and poverty alleviation program implementation in Rolpa district of Nepal to ensure better socio-economic conditions and more equitable access to opportunities.

AWARDS AND RECOGNITIONS [21]

- Awarded **2024 Graduate Student Research Paper Award** by the Association of Agricultural, Biological, and Food Engineers of Indian Origin (AABFEIO). This award was

presented at the AABFEIO dinner meeting during the 2024 ASABE annual international meeting at Anaheim, California.

- Awarded **2024 Honorable Mention Emerging Scholar Award** by the Association for Academic Women (AAW) at the University of Florida. This is a university level award for Ph.D. candidates possible through nominations from respective colleges and highlights the ability to articulate the importance and transformative potential of the dissertation work.
- Awarded **Second Place in the 2024 College and University Students' Essay Writing Contest** by the Nepalese Association of Agricultural Professionals of Americas (NAPA) during the 4th Biennial International Scientific Conference in Baltimore, Maryland, USA. This award recognizes excellence in writing on the topic of "Climate-Smart and Innovative Agriculture for Sustainable and Resilient Agri-Food Systems".
- Awarded University of Florida **Graduate Student Council travel grant** to present the research findings at the 2024 American Society of Agricultural and Biological engineers (ASABE) Annual International Meeting held at Anaheim, California.
- Awarded **2023 Florida Stormwater Association Educational Foundation (FSAEF) Scholarship** by the Florida Stormwater Association (FSA). This is a state level award and recognizes the educational interest in stormwater quality and management.
- Awarded **2023 Sanford N. Young Scholarship** by the Florida Section American Water Resources Association (AWRA Florida). This is a state level award and recognizes individuals for work in the area of water resources science, technology, or management.
- Awarded **2023 Educational Aids Blue Ribbon award** by American Society of Agricultural and Biological Engineers (ASABE) for the paper "Acharya, B., Sharma, V. (2022). *Methods to Quantify In-Field Nutrient Leaching*". <https://doi.org/10.32473/edis-ae581-2022> ASABE Annual International Meeting Omaha, Nebraska.
- Awarded **top-up fellowship** for academic year 2023-2024 by the University of Florida Agricultural and Biological Engineering Department.
- Awarded **student registration scholarship** by the Center for Land Use Efficiency (CLUE) to attend 2024 University of Florida Water Institute Symposium held in Gainesville, FL.
- Awarded **complimentary conference registration and hotel cost** by the Florida Stormwater Association (FSA) to attend 2023 FSA Winter Conference held in Orlando, FL.
- Awarded **complimentary conference registration and hotel cost** by the Florida Section American Water Resources Association (AWRA Florida) to attend 2023 AWRA Florida annual meeting held in Key West, FL.
- Awarded University of Florida **Water Institute Travel Award Summer 2023** to present the research findings at the 2023 American Society of Agricultural and Biological engineers (ASABE) Annual International Meeting held at Omaha, Nebraska.

- Awarded University of Florida **Institute of Food and Agriculture Science travel grant** to present the research findings at the 2023 American Society of Agricultural and Biological engineers (ASABE) Annual International Meeting held at Omaha, Nebraska.
- Awarded University of Florida **Graduate Student Council travel grant** to present the research findings at the 2023 American Society of Agricultural and Biological engineers (ASABE) Annual International Meeting held at Omaha, Nebraska.
- Awarded **complimentary conference registration and hotel cost** by the Florida Association of Water Quality Control (FAWQC) for student poster presentation in 2023 FAWQC annual conference held in Naples, FL.
- Awarded **McNair Bostick Scholarship** for the academic year 2023 at the University of Florida. This is a departmental level award and recognizes individuals working on modeling and analysis of agricultural systems and natural resources.
- Awarded **Provost annual top-up funding** for the academic year 2022-2023 at the University of Florida
- Awarded **Grinter Fellowship** for Fall 2020 and Spring 2021 term at the University of Florida. This award is presented to recruit truly exceptional graduate students at the University of Florida.
- Awarded **Brand of Excellence - Y Cross Ranch Graduate Scholarship** for academic year 2018-2019 and 2019-2020 to pursue M.S. in Plant Sciences at the University of Wyoming.
- Awarded **Irrigation Association's E3 Winner grant** to attend Irrigation Show and Education Conference at Long Beach, California, USA. December 2018.
- Awarded four-year undergraduate **merit scholarship** by Institute of Agriculture and Animal Sciences, Tribhuvan University, Nepal. 2013-2017.

PUBLICATIONS

Peer-Reviewed Journal Articles [4]

- Acharya, B., Sharma, V., Barrett, C., Sindhu, S.S., Zotarelli, L., Dukes, M. (2022). Methods to Quantify in-field Nutrient Leaching: AE581/AE581, 12/2022. EDIS 2022 (6). <https://doi.org/10.32473/edis-ae581-2022>
- Acharya, B., Sharma, V. (2021). Comparison of Satellite Driven Surface Energy Balance Models in Estimating Crop Evapotranspiration in Semi-Arid to Arid Inter-Mountain Region. *Remote Sens.* 13, 1822. <https://doi.org/10.3390/rs13091822>
- Acharya, B., Sharma, V., Heitholt, J., Tekiela, D., Nippgen, F. (2020). Quantification and Mapping of Satellite Driven Surface Energy Balance Fluxes in Semi-Arid to Arid Inter-Mountain Region. *Remote Sens.* 12, 4019. <https://doi.org/10.3390/rs12244019>

- Acharya, B., and Shrestha, R.K. (2018). Nitrogen level and irrigation interval on mitigating Stemphylium blight and downy mildew in onion. *International Journal of Applied Science and Biotechnology*. 6(1) 17-22. <https://doi.org/10.3126/ijasbt.v6i1.18795>

To be submitted [6]

- Acharya, B., Sharma, V. (2024). Impact of Rotational Production on Nitrogen Dynamics and Yields: A Comparison of Conventional and Sod-based Systems (**internal review**).
- Acharya, B., Sharma, V. (2024). Comparative Analysis of Soil and Water Dynamics in Conventional and Sod-based Crop Rotations in the Suwannee River Basin (**internal review**).
- Acharya, B., Sharma, V. (2024). Comparing Passive Wick Lysimeters and Soil Water Balance: Drainage Volume and Field Placement Effects (**Internal review**)
- Acharya, B., Sharma, V. (2024). Modeling Nutrient Leaching - Field to Regional Scale Estimation: A Review (**Internal review**)
- Acharya, B., Sharma, V. (2024). Simulation of Nitrogen and Water Balance in a Rotational Production System using DSSAT Cropping System Model (**Internal review**)
- Acharya, B., Sharma, V. (2024). Compare and Evaluate HYDRUS-1D and SWAT on Simulating Nitrogen and Water Balance in a Rotational Production System (**Internal review**)

GRANTS

- **Acharya, B.** and Sharma, V. “Simulation of Water and Nitrate Flow across Four Different Rotational Production using Process-Based Models”. Submitted for Grant A. Harris Fellowship. Submitted in Jan. 2022. (*not funded*)

ABSTRACTS AND PRESENTATIONS [27]

- Acharya, B., and Sharma, V. (2024). Simulating Nitrogen and Water Dynamics in a Rotational Production System. An oral presentation at the Florida Section American Society of Agriculture and Biological Engineers (FL-ASABE).
- Acharya, B., and Sharma, V. (2024). Nitrogen and Water Dynamics in Conventional vs. Sod-based Crop Rotations. A poster presentation at Agricultural and Biological Engineering Department Poster Symposium, University of Florida.
- S.S. Sidhu, S.S. Bhullar, B. Acharya, and V. Sharma (2024). An update on 16-year rotational study: Layering of cropping systems, precision ag. techniques, and BMPs for improving water quality and nutrient management in Northcentral FL. ASA-Southern Regional Branch Annual Meeting, Atlanta, GA.
- Acharya, B., Dukes, D. M., Zotarelli, L., Sidhu, S.S., and Sharma, V. (2023). Comparing the Effectiveness of Four Different Rotational Production on Nitrate Leaching in Sandy Soils of Northern Florida. An oral presentation at the Agronomy Society of America-Crop Science

Society of America-Soil Science Society of America international annual meeting (ASA-CSSA-SSSA).

- Sidhu, S.S., Bhullar, S.S., Acharya, B., Sharma, V., and Kumar. S. **(2023)**. Adopting and Comparing Selective BMPs on Different Cropping System as an Approach for Improving Yield, Water and Nutrient Management. An oral presentation at the Agronomy Society of America-Crop Science Society of America-Soil Science Society of America international annual meeting (ASA-CSSA-SSSA).
- Acharya, B., and Sharma, V. **(2023)**. Simulating Nitrogen and Water Dynamics in a Rotational Production System. A poster presentation at the Agronomy Society of America-Crop Science Society of America-Soil Science Society of America international annual meeting (ASA-CSSA-SSSA).
- Acharya, B., and Sharma, V. **(2023)**. Rotational Production for Agricultural Best Management Practice (BMP). An oral presentation at the American Society of Agriculture and Biological Engineers - Annual international meeting (ASABE - AIM).
- Acharya, B., and Sharma, V. **(2023)**. Simulating Nitrogen and Water Dynamics in a Rotational Production System. A poster presentation at the American Society of Agriculture and Biological Engineers - Annual international meeting (ASABE - AIM).
- Prasanna, V., Morrow, M., Acharya, B., Voddevolu, U.B.P., Sharma, V. **(2023)**. Development of Integrated Precision Irrigation and Nitrogen Management Strategies for Potatoes. An oral presentation at the American Society of Agriculture and Biological Engineers - Annual international meeting (ASABE - AIM).
- Acharya, B., and Sharma, V. **(2023)**. Comparing the Effectiveness of Four Different Rotational Production Systems on Nitrate Leaching in Sandy Soils of Suwannee River Basin. A poster presentation at the Florida Association for Water Quality Control (FAWQC).
- Acharya, B., and Sharma, V. **(2023)**. Rotational Production for Agricultural Best Management Practice (BMP). An oral presentation at the Florida Section American Society of Agriculture and Biological Engineers (FL-ASABE).
- Acharya, B., and Sharma, V. **(2023)**. Simulating Nitrogen and Water Dynamics in a Rotational Production System. An oral presentation at the Florida Section American Society of Agriculture and Biological Engineers (FL-ASABE).
- Acharya, B., and Sharma, V. **(2023)**. Simulating Nitrogen and Water Dynamics in a Rotational Production System. A poster presentation at Agricultural and Biological Engineering Department Poster Symposium, University of Florida.
- Prasanna, V., Morrow, M., Acharya, B., Voddevolu, U.B.P., Sharma, V. **(2023)**. Development of Integrated Precision Irrigation and Nitrogen Management Strategies for Potatoes. A poster presentation at School of Natural Resources and Environment Poster Symposium, University of Florida.

- Sidhu, S.S., Morrow, M., Sharma, V., Acharya, B., Hochmuth, C.R., and Sharma, L. (2022). Impacts of Cropping Systems on Crop Yields of FL Water Quality. An oral presentation at the Agronomy Society of America-Crop Science Society of America-Soil Science Society of America international annual meeting (ASA-CSSA-SSSA).
- Sharma, V., Acharya, B., Barrett, C., Sidhu, S.S., Dukes, D. M., Sharma, L., Zotarelli, L., and Bayabil, H. (2022). Effectiveness of Rotational Production as a Best Management Practice to Reduce Nitrogen Inputs and Irrigation Water use. An oral presentation at the American Society of Agriculture and Biological Engineers - Annual international meeting (ASABE - AIM).
- Acharya, B., and Sharma, V. (2022). Simulating Nitrogen and Water Dynamics in a Rotational Production System. A poster presentation at American Society of Civil Engineers-Environmental and Water Resource Institute (ASCE-EWRI).
- Acharya, B., and Sharma, V. (2022). Simulating Nitrogen and Water Dynamics in a Rotational Production System. An Oral presentation at Florida section of American Society of Agricultural and Biological Engineers (FL-ASABE).
- Sharma, V., and Acharya, B. (2021). Comparison of Different Surface Energy Balance Models in Estimation of Crop Evapotranspiration Semi-arid to Arid Inter-Mountain Terrain. An oral presentation at the American Society of Agricultural and Biological engineers - Annual international meeting (ASABE - AIM).
- Acharya, B. (2021). Comparing the Effectiveness of Crop Rotation on Nitrate Leaching in Sandy Soils of Northern Florida. A 3-minute Thesis competition at Agricultural and Biological Engineering Department, University of Florida.
- Acharya, B., and Sharma, V. (2020). Quantification and Mapping of Crop Evapotranspiration using Remote Sensing Based Surface Energy Balance Models in the Inter Mountain Terrain. A poster presentation at Agricultural and Biological Engineering Department Virtual Poster Symposium, University of Florida.
- Acharya, B., and Sharma, V. (2020). Quantification and Mapping of Surface Energy Balance Fluxes using METRIC algorithm in the Semi-arid to Arid region of Wyoming. A poster presentation at the American Society of Agricultural and Biological engineers- Annual International Meeting (ASABE - AIM), Virtual and On Demand.
- Acharya, B., and Sharma, V. (2020). Comparison of Different Satellite-based Image Processing Models on Estimating Surface Energy Balance Fluxes in Semi-arid to Arid Region of Wyoming. An oral presentation at the American Society of Agricultural and Biological engineers - Annual International Meeting (ASABE - AIM), Virtual and On Demand.

- Acharya, B., and Sharma, V. (2019). Quantification of Actual Crop Evapotranspiration using Satellite Remote Sensing in Southeast Wyoming and Nebraska Panhandle. A poster presentation at Sustainable Agricultural Research and Extension Center (SAREC), Lingle, WY.
- Acharya, B., and Sharma, V. (2019). Quantification of Actual Crop Evapotranspiration using Satellite Remote Sensing in Big-Horn Basin of Wyoming. Powell Research and Extension Center (PREC), Powell, WY.
- Acharya, B. (2017). Nitrogen level and irrigation interval on mitigating Stemphylium blight and downy mildew in onion. An oral presentation at International Conference on Mountains in the Changing World (MoChWo) in Kathmandu, Nepal.
- Acharya, B. (2017). Nitrogen level and irrigation interval on mitigating Stemphylium blight and downy mildew in onion. 4th Symposium on Undergraduate Practicum Assessment, Lamjung, Nepal.

TECHNICAL SKILLS

- **Programming Languages**
Proficient in Python and R for data analysis and modeling.
- **Hydrological & Crop Growth Simulation Models**
Experienced with DSSAT, HYDRUS, SWAT, and WAVE for environmental and agricultural modeling.
- **Web Development and Version Control**
Proficient in using GitHub for version control, project collaboration, and hosting of web projects.
- **Geospatial Software**
Proficient in ERDAS IMAGINE, ENVI, and ArcGIS for geospatial data analysis and mapping.
- **Statistical Software**
Experienced in R, JMP Pro, and SPSS for advanced statistical analysis and data visualization.
- **Agricultural Measurements**
Skilled in various agricultural data collection methods including lysimeter sampling, soil and plant tissue sampling, soil moisture monitoring, plant canopy monitoring, and the use of Tempe cells and pressure plate apparatus.
- **Farm Equipment**
Knowledgeable in the operation and management of irrigation systems.

PROFESSIONAL ACTIVITIES

- Served as a reviewer for the American Society of Agricultural and Biological Engineers (ASABE) Journal and American Society of Agronomy's flagship Agronomy Journal
- Served as a volunteer for the oral sessions at the 9th University of Florida Water Institute Symposium, Gainesville, FL. February 2024
- Co-Trainer, 'Transfer of Technology' Training Program - National Youth Council & District Youth Committee, Lamjung, Nepal August 2017

CERTIFICATION/TRAINING/WORKSHOP

- “Advanced Data Analytics for Natural Resources Management using R” led by Dr. Sushant Mehan at the Agronomy Society of America-Crop Science Society of America-Soil Science Society of America international annual meeting (ASA-CSSA-SSSA), October 30, 2023.
- “Coding Richards Equation Numerical Solution using Python Programming Language” led by Dr. Rafaz Munoz Carpena, June 2023.
- “Modeling of Water Flow and Contaminant Transport in Porous Media Using the HYDRUS Software Packages” led by Dr. Jiri Simunek, September 7-8, 2022.
- “Fundamental of Deep Learning” led by NVIDIA, June 2022.
- “Practicum AI: Python Workshop series” led by Matt Gitzendanner and University of Florida Research Computing Training Team, May 2022.
- “Introduction to Research Computing and HiPerGator” led by Matt Gitzendanner and University of Florida Research Computing Training Team, January 2022.
- “Decision Support System for Agrotechnology Transfer (DSSAT) International Training Program” led by Dr. Gerrit Hoogenboom, Dr. Ken Boote, Dr. Upendra Singh, Dr. Willingthon Pavan, Dr. Cheryl Porter, and Vakhtang Shelia, May 17- 22, 2021.
- “Summer School on Agricultural Meteorology” led by Institute of Agriculture and Animal Sciences (IAAS), Tribhuvan University, Nepal, May 2018.

COMMUNITY SERVICE

- **Executive Student Member, Student Coordination Committee, Nepalese Agricultural Professionals of Americas (NAPA)** May 2022-May 2024
Actively contributed to the strategic planning and coordination of activities for agricultural professionals within the Americas region.
- **Executive Member, Nepalese Student Association, University of Florida** 2022-2023
Played a key role in organizing cultural and educational events, fostering community engagement among Nepalese students.
- **Organizer & Participant, COVID-19 Relief Fund, Nepal** June-July 2020

Led and participated in fundraising initiatives to support healthcare and community needs during the COVID-19 outbreak in Nepal.

- **Dormitory Captain, Tribhuvan University** 2015-2016
Oversaw residential life operations and served as a liaison between students and university administration, enhancing dormitory living experience.
- **Class Representative, Tribhuvan University** 2015-2016
Represented student interests, coordinated academic discussions, and facilitated communication between faculty and students.
- **Volunteer, Nepal Earthquake Relief Program** April-May 2015
Engaged in on-ground support and relief activities in response to the 2015 Nepal earthquake, contributing to community recovery efforts.

PROFESSIONAL AFFILIATIONS

- American Society of Agronomy; 2019 to present.
- Crop Science Society of America; 2019 to present.
- Soil Science Society of America; 2019 to present.
- American Water Resources Association, 2023
- American Society of Agricultural and Biological Engineers; 2019 to present.
- American Water Works Association; 2020 to present.
- ABE Graduate Student Organization, University of Florida; 2020 to present.
- Environmental and Water Resource Institute; 2021 to present.
- Nepalese Agricultural Professional of Americas; 2021 to present.