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Links to Online Resources

- Personal Lab Website
- Oklahoma Agricultural Scientific Irrigation Scheduler – OASIS Tool (Summer 2026)
- LinkedIn
- OSU Experts Page
- OrcID
- Twitter/X

Career Mission Statement

My overall goal is to contribute to the advancement of sustainable water management systems by bridging research, innovation, outreach, and education in the field of irrigation engineering. In the face of growing global water scarcity and shifting climatic conditions, I am committed to developing science-based solutions that enhance irrigation efficiency, conserve natural resources, and support the long-term productivity of agricultural systems. Through my research, I am exploring cutting-edge technologies involving in-situ sensors, numerical models, and more importantly, data-driven approaches such as machine learning to promote precision irrigation scheduling and to address critical challenges in irrigation design and scheduling, ensuring that water use in agriculture remains efficient and sustainable.

Equally important is my role as an educator and mentor. I am dedicated to inspiring and equipping the next generation of engineers and researchers with a strong foundation in sustainable irrigation practices and innovative problem-solving approaches. By creating an engaging and inclusive learning environment, I aim to empower students with the technical knowledge, critical thinking skills, and ethical responsibility needed to drive meaningful change in agricultural water management.

Collaboration is a cornerstone of my work. Partnering with stakeholders, including farmers, policymakers, industry leaders, and academic peers, I strive to translate outcomes of irrigation scheduling research into practical applications that directly benefit Oklahomans and beyond. Therefore, I aim to contribute to a more resilient agricultural future, where water resources are managed wisely to balance environmental conservation, economic growth, and food security for generations to come.

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CAREER SUMMARY

Grantsmanship		
	Cumulative	**At OSU (6/2023 – Present)**
Total Number of Grants	14	11
Awarded Total	$11.3M[a] ($1.4M[b])	$10.1M ($877.5K)
Awarded as Lead PI	$1.1M ($570.8K[c])	$96.9K ($96.9K)
Awarded as Co-PI	$10.3M ($787.5K)	$10.2M ($780.5K)
Cumulative Research Outputs		
Peer-reviewed Publications	17	
Conference Presentations: Oral	16	
Conference Presentations: Poster	20	
Cumulative Teaching Outputs		
Taught Courses	3 Undergraduate and Graduate level courses	
Guest Lectures	6	
Student Recruitment Events	5	
Cumulative Extension Outputs		
Peer-reviewed Publications	Extension Factsheets: 4	
Extension Presentations	11	
Extension Service	1	
Tools Developed		
Oklahoma Agricultural Scientific Irrigation Scheduler – OASIS Tool (Available to the public in Fall 2025)		
Student Mentoring		
Students Mentored in Total	15 (8 Ph.D., 5 M.S., 2 B.S.)	
Students Mentored as Major Advisor	5 (1 Ph.D., 3 M.S., 1 B.S.)	

[a] M: Millions
[b] Values in parenthesis indicate $ awarded to Dr. Datta's program specifically.
[c] K: Thousands

1. Education & Employment Background

1.1. Education

Ph.D. Biosystems Engineering 5/2020
Department of Biosystems & Agricultural Engineering
Oklahoma State University, Stillwater, OK
Major Advisor: Dr. Saleh Taghvaeian
Dissertation: Measurement and Modeling of Soil Moisture for Irrigation Management (View)

M.S. Agricultural & Biosystems Engineering 12/2016
Department of Agricultural & Biosystems Engineering
North Dakota State University, Fargo, ND
Major Advisor: Dr. Shafiqur Rahman
Thesis: Quantification and Characterization of Particulate Matter Generated from Unpaved Roads in the Oil Development Area of Western North Dakota (View)

B.S. Agricultural Engineering 1/2014
Bangladesh Agricultural University, BD
Major Advisor: Md. Siddikur Rahman
Project: Waste Generation and Management Practices in BSCIC, Mymensingh (View)

1.2. Professional Positions Held

Assistant Professor & Irrigation Engineer 6/2023 – Present
75% Research, 25% Teaching
Biosystems & Agricultural Engineering, Oklahoma State University, Stillwater, OK

Assistant Extension Professor & Extension Agricultural Engineer 5/2022 – 6/2023
100% Extension
Cooperative Extension, University of Maine, Orono, ME

Postdoctoral Fellow 6/2020 – 5/2022
Biosystems & Agricultural Engineering, Oklahoma State University, Stillwater, OK

Graduate Research Assistant 1/2017 – 5/2020
Biosystems & Agricultural Engineering, Oklahoma State University, Stillwater, OK

Graduate Research Assistant 1/2015 – 12/2016
Agricultural & Biosystems Engineering, North Dakota State University, Fargo, ND

Undergraduate Research Assistant 1/2013 – 10/2014
Agricultural Engineering & Technology, Bangladesh Agricultural University, BD

1.3. Certifications

Engineer Intern (EI), Maine, License # EI8079

2. GRANTSMANSHIP

2.1. Overview

At Oklahoma State University (6/2023 – Present)				
	Grants Funded		**Current Grants**	
	Total	PI share	Total	PI share
Total	$10.3M[a]	$877.5K[b]	$10.1M	$772.9K
As Lead PI	$96.9K	$96.9K	$20.0K	$20.0K
As Co-PI	$10.2M	$780.5K	$10.1M	$752.89K

2.2. Grants Funded[c]

At Oklahoma State University (as a Faculty, 6/2023 - Present)

GF1. Thapa, B., Deol, S., Wagner, K., & **Datta, S.** (2025). Water Meters for Smart Savings and Conservation? Examining Water Meters as a Tool for Sustainable Irrigation in Oklahoma's Rural Communities. Rural Renewal Initiative. Co-PI. 1/2025 – 12/2027. $90,000[d] ($8,000[e])

Summary: This study explores whether water meters can boost groundwater conservation for irrigation in Western Oklahoma over two years to guide water policy, promote sustainable farming, and help rural communities manage scarce water. Dr. Datta will collect irrigation and flowmeter data from participating farms. Funded (i) travel costs and (ii) student salary to research sites for data collection.

GF2. Faruque, I., Das, H., & **Datta, S.** (2025). Cost-effective Edge Sensors: Resourcing AI for Irrigation Networks (CES-RAIN). OSU College of Engineering, Architecture, and Technology ERSF Seed Grant. Co-PI. 8/2025 – 7/2026. $25,000 ($0).

Summary: This study will develop a low-cost canopy temperature sensor for irrigation scheduling. Dr. Datta has developed the idea along with Dr. Hritom Das of Electrical & Computer Engineering. Dr. Datta is not requesting any support, but will be providing reference sensors and will conduct field-testing of the sensor in OSU Agricultural Experimentation Station. Funded one undergraduate student and one graduate student on this project.

GF3. Metzger, S., Jha, G., Cibils, A., Jagadish, K., Wagner, K., **Datta, S.,** Young, J., Sharma, S., Zipper, S., Lambert, D., Long, M., Purdy, AJ, Steiner, J., Lambert, L., McCallister, D., Johnson, L., Ciampitti, I., McCornack, B., Grimm, R., Colson, N., Guo, W., Melton, F., Golden, B., Sanderson, M., Guerrero, B., & Borgstedt, S. (2025). Sustainable Irrigation and Climate Adaptation in Southern High Plains: A Satellite-Enabled and Peer-Led Model. USDA NIFA AFRI Sustainable Agricultural Systems. Co-PI. 2/2025 – 1/2030. $10,000,000 ($744,897)

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[a] M = Millions
[b] K = Thousands
[c] Grants are presented in reverse chronological order. GF: Funded Grants – numbered as GF1, GF2, …, GFn.
[d] Total $ amount awarded by Sponsor
[e] Total $ amount awarded to Dr. Datta

Summary: The project tackles groundwater depletion in the Southern Great Plains by using OpenET data to develop innovative irrigation planning and scheduling solutions. Funded (i) one graduate student for 5 years, (ii) PI salary, (iii) travel to research sites and conferences, (iv) more than $220K budgeted towards research instrument, equipment, and computer.

GF4. **Datta, S.** (2025). Deployment of Advanced Autonomous Oklahoma Irrigation Planner. Oklahoma Mesonet Products Development Fund. Lead PI. 1/2025 – 9/2025. $18,000 ($18,000)

Summary: The model development concluded in 2024, and we are working on model deployment. Upon deployment, we will conduct beta testing of the tool by collecting feedback from agricultural producers through 2026. Funded one graduate student for 9 months.

GF5. **Datta, S.** (2025). Data-driven Canopy Temperature Modeling for Irrigated Cotton: Phase II – Evaluation of Instrumentation Requirement for Data-driven Approaches. Cotton Incorporated Core Funding. Lead PI. 1/2025 – 12/2025. $20,000 ($20,000)

Summary: This project focuses on completing and expanding data-driven modeling research on canopy temperature for irrigated cotton. Funded (i) graduate student salary for 6.5 months and (ii) publication of manuscripts.

GF6. **Datta, S.** (2024). Investigating Changes in Consumptive Water Use in Furrow and Subsurface Drip Irrigated Cotton Fields. USGS 104b. Lead PI. 9/2024 – 8/2025. $24,995 ($24,995)

Summary: This project will assess how seasonal evapotranspiration (ET) varies in furrow and subsurface irrigated fields to evaluate future water demands in the Lugert-Altus Irrigation District. Funded (i) one graduate student for 4.6 months, (ii) one undergraduate student for ~5 months, (iii) travel to research sites and conferences, (iv) computer, and (v) publication of one manuscript.

GF7. **Datta, S.** (2024). Data-driven Canopy Temperature Modeling for Irrigated Cotton: Phase I – Evaluation of State-of-the-art Data-driven Approaches. Cotton Incorporated Core Funding. Lead PI. 6/2024 – 12/2024. $13,998 ($13,998)

Summary: This study evaluated five ML approaches in estimating CT for irrigation management for irrigated cotton fields. Funded (i) one graduate student for ~3 months, (ii) travel to research sites, and (iii) procurement of research instrument and equipment.

GF8. **Datta, S.** (2024). Building an Advanced Autonomous Oklahoma Irrigation Planner. Oklahoma Mesonet Products Development Fund at Oklahoma State University. Lead PI. 5/2024 – 12/2024. $18,000 ($18,000)

Summary: The current Oklahoma Irrigation Planner on Mesonet uses a simple water balance but lacks soil texture data and crop-specific thresholds. This project developed an improved version using a dual-crop coefficient soil water balance, allowing in-season user inputs for more precise irrigation decisions. Funded one graduate student for 7 months.

GF9. Wagner, K., Sharma, S., Frazier, S., Mirchi, A., **Datta, S.** (2024). Oklahoma Master Irrigator Program and Ogallala Aquifer Study. Oklahoma Water Resources Board/Oklahoma Conservation Commission. Co-PI. 1/2022 – 8/2024. $60,081 ($19,734)

Summary: Dr. Datta automated the estimation of water uniformity indicators and collected field data from producers. He also developed and delivered a detailed Soil Water Relationships curriculum at the 2024 Oklahoma Master Irrigator Program. Funded (i) one graduate student for 3 months, and (ii) PI's 12th month salary.

GF10. **Datta, S.** (2024). Comparison of Consumptive Water Use of Different Irrigation Systems in Lugert-Altus Irrigation District. 2024 OSU Buchanan Undergraduate Research Fund. Lead PI. 1/2024 – 5/2024. $2,000 ($2,000)

Summary: Dr. Datta led this grant and advised one BAE undergraduate student (Ms. Tatumn Kennedy, sophomore) on comparing ET among irrigation systems in Lugert-Altus Irrigation District. Funded one undergraduate student salary for Spring 2024.

GF11. Sharma, S., Frazier, R. S., **Datta, S.**, & Wagner, K. (2024). Annual Funding for Conducting Irrigation System Audits for Oklahoma Master Irrigator Program and Mobile Irrigation Lab. Oklahoma Conservation Commission/Oklahoma Water Resources Board. Co-PI. 1/2024 - 12/2024. $31,622 ($7,866)

Summary: This projects funds annual budget for "Mobile Irrigation Lab" and for Dr. Datta to conduct irrigation pump energy and water uniformity audits at irrigated croplands throughout the state. Funded (i) travel costs and (ii) student salary to research sites for data collection.

At Oklahoma State University (as a Student, 1/2017 – 5/2020)

GF12. Taghvaeian, S., & **Datta, S.** (2018). Conserving Agricultural Water Resources Using Smart Technologies. USGS 104b. Co-PI. 9/2018 – 8/2019. $5,000 ($5,000)

Summary: This study advanced knowledge on sensor-based irrigation by assessing how soil clay and salinity affect the accuracy of five common soil moisture sensors and by testing different soil moisture threshold methods. Funded (i) a computer, and (ii) student salary of ~2 months.

At University of Maine (as a Faculty, 5/2022 – 6/2023)

GF13. **Datta, S.,** Venturini, E., Calderwood, L., Khoda, B., Belding, J., & Dinesh, V. (2023). Piloting Innovation in Wild Blueberry: Team WILD – Wild Blueberry Innovations Led by Data. Maine Technology Institute. Lead PI. 5/2023 – 12/2026. $1,000,000 ($473,836)

Summary: This project arose from the lack of innovation and the loss of the sole harvester manufacturer for Maine's Wild Blueberry industry by studying current technologies and producers to develop data-driven improvements. Funded (i) PI salary for 1 month, (ii) two graduate students for 3 years, each, (iii) travel to research sites and conferences, and (iv) research instrument and equipment.

GF14. Li, L., Zhang, Y., Daigneault, A., O'Neill, S, R., **Datta, S.,** & Zhang, L. (2023). Socio-Economic and Environmental Analyses for Using Woody Biochar to Conserve Water and Sustain Agriculture in Maine. University of Maine Water Resources Research Institute. Co-PI. 9/2023 – 8/2024. $40,000 ($2,000)

Summary: This project tested whether woody biochar could boost soil water availability, reduce leaf water stress, and extend fertilizer retention in Wild Blueberry fields. Funded PI salary for one week.

3. RESEARCH ACTIVITIES

3.1. Overview

Dr. Datta's research objectives are to monitor and study the bio-physical interactions within irrigation systems boundary to find answers to two most important questions: when should we turn on and off irrigation systems – also known as scientific irrigation scheduling. He uses in-situ sensors (e.g., soil moisture and canopy temperature sensors), satellite products (e.g., high resolution Landsat imageries), models (e.g., soil water balance, numerical models), and recently, data-driven approaches (e.g., machine learning/deep learning) to find best approaches to scientific irrigation scheduling.

3.2. Peer-reviewed Research Publications[a, b]

3.2.1. Manuscripts Submitted

MS1. N/a

3.2.2. Manuscripts Published

MP1. DeJonge, K. C., Allen, R. G., Kilic, A., Thorp, K. R., Kukal, M. S., Marek, G., Altenhofen, J., Blankenau, P., **Datta, S.**, Grabow, G., Hashem, A. A., Kisekka, I., Kjaersgaard, J., Marek, T., Peters, T., Porter, D., Reba, M., Rudnick, D., Senay, G., Sharma, V., Sridhar, V., Sun, G., Taghvaeian, S., Trezza, R., & Trout, T. (2025). Evapotranspiration Terminology and Definitions. ASCE Journal of Irrigation and Drainage Engineering, 151(5): 06025003. https://doi.org/10.1061/JIDEDH.IRENG-10491

MP2. **Datta, S.**, Taghvaeian, S., Sibley, M., Gholson, D. M., Yost, M., Long, M. A., Bali, K. M., Zaccaria, D., Davis-Conger, S. L., & Ritchie, L. A. (2025). Irrigation and Water Conservation Practices of Surface-Irrigated Croplands in West and South Regions of the US. Journal of the ASABE, 68(3), 503-511. https://doi.org/10.13031/ja.16257

MP3. Akbar, M. U., Mirchi, A., Arshad, A., Alian, S., Mehata, M., Taghvaeian, S., Khodkar, K., Kettner, J., **Datta, S.,** & Wagner, K. (2025). Multi-model Ensemble Mapping of Irrigated Areas Using Remote Sensing, Machine Learning, and Ground Truth Data. Agricultural Water Management, 312, 109416. https://doi.org/10.1016/j.agwat.2025.109416

MP4. Kettner, J., Taghvaeian, S., Pokhrel, N., Mirchi, A., Zhang, L., Mehata, M., & **Datta, S.** (2025). Water Dynamics of Variably Irrigated Pecan Trees in Oklahoma. Journal of the American Pomological Society, 78(2): 85-99. https://doi.org/10.71318/tak32v50

MP5. Munmun, T. H., Islam, M. T., Rahman, M. M., Islam, M. A., **Datta, S.**, Das, N., Akter, J., & Adham, A. K. M. (2024). Rice Cultivation Under Raised Bed Conserving Irrigation Technique: Effects of Bed Width on Soil Wetness and Yield. Paddy and Water Environment. https://doi.org/10.1007/s10333-023-00957-3

[a] List of publications are presented in reverse chronological order.MR: Manuscripts submitted/under review – numbered as MS1, MS2, …, MSn; and MP: Manuscripts published – numbered as MP1, MP2, …, MPn.
[b] Advisees are underlined.

MP6. **Datta, S.**, & Taghvaeian, S. (2023). Soil Water Sensors for Irrigation Scheduling in the United States: A Systematic Review of Literature. Agricultural Water Management, 278, 108148. https://doi.org/10.1016/j.agwat.2023.108148

MP7. Mehata, M., **Datta, S.**, Taghvaeian, S., Mirchi, A., & Moriasi, D. N. (2023). Effects of Soil Data Accuracy on Outputs of Irrigation Scheduling Tools. Journal of the ASABE, 66(3), 677-687. Journal of the ASABE, 66(3), 677-687.
https://doi.org/10.13031/ja.15323

MP8. Mehata, M., **Datta, S.**, Taghvaeian, S., Ochsner, T., Mirchi, A., & Moriasi, D. N. (2023). Performance of a Multi-sensor Capacitance Probe in Estimating Soil Water Content and Field Capacity. Journal of the ASABE, 66(2), 253-261.
https://doi.org/10.13031/ja.15416

MP9. Mehata, M., **Datta, S.**, Taghvaeian, S., Mirchi, A., Moriasi, D., & Starks, P. J. (2022). Simulating Soil Water Content of Irrigated Fields: The Effects of Variable Soil Data and Root Water Uptake Distribution. Journal of the ASABE, 65(3), 587-597. https://doi.org/10.13031/ja.14856

MP10. **Datta, S.**, Mehata, M., Taghvaeian, S., Moriasi, D., & Starks, P. J. (2021). Quantifying Water Fluxes of Irrigated Fields in an Agricultural Watershed in Oklahoma. ASCE Journal of Irrigation and Drainage Engineering, 147(7): 04021026. https://doi.org/10.1061/(ASCE)IR.1943-4774.0001570

MP11. Ajaz, A., **Datta, S.**, & Stoodley, S. (2020). High Plains Aquifer–State of Affairs of Irrigated Agriculture and Role of Irrigation in the Sustainability Paradigm. Sustainability, 12(9): 3714. https://doi.org/10.3390/su12093714

MP12. **Datta, S.**, & Ajaz, A. (2019). Geospatial Data Assimilation and Mapping Groundwater Vulnerability in High Plains Aquifer using DRASTIC Model. Fundamental and Applied Agriculture, 4(3): 933-942. http://dx.doi.org/10.5455/faa.53506

MP13. Rana, M. M., Islam, M. T., **Datta, S.**, Rahman, M. M., & Adham, A. K. M. (2019). Suitability of Powerplant Disposed Water for Irrigation of Ashuganj Agro-Irrigation Project in Bangladesh. Progressive Agriculture, 30(1), 113-124.
https://doi.org/10.3329/pa.v30i1.42218

MP14. **Datta, S.**, Rahman, S., Borhan, M.S., Saini-Eidukat, B., Cihacek, L., & Ringwall, K. (2019). Quantification and Characterization of Particulate Matter Generated from Unpaved Roads in the Oil Development Area of Western North Dakota. Transactions of the ASABE, 62(3): 615-625. https://doi.org/10.13031/trans.13169

MP15. Masasi, B., Taghvaeian, S., Boman, R., & **Datta, S.** (2019). Impacts of Irrigation Termination on Cotton Yield and Irrigation Requirement. Agriculture, 9(2), 39. https://doi.org/10.3390/agriculture9020039

MP16. **Datta, S.**, Taghvaeian, S., Ochsner, T., Moriasi, D., Gowda, P., & Steiner, J. (2018). Performance Assessment of Five Different Soil Moisture Sensors under Irrigated Field Conditions in Oklahoma. Sensors, 18(11), 3786. https://doi.org/10.3390/s18113786

MP17. Rahman, S., **Datta, S.**, & Islam, S. (2014). Waste Generation and Management Practices in BSCIC, Mymensingh. Journal of Environmental Science and Natural Resources, 7(1): 47-51. https://doi.org/10.3329/jesnr.v7i1.22143

3.3. Conference Presentations

3.3.1. Oral Presentations[a]

CO1. Pandit, A., **Datta, S.,** Taghvaeian, S. (2025). A Seasonal Irrigation Abstraction Framework to Strategize Water Allocation. 2025 UCOWR Annual Meeting, Minneapolis, MN, June 3-6, 2025.

CO2. **Datta, S.** (2024). Leveraging Data: Scheduling Irrigations with Minimal Needs for Instrumentation. 2024 ASABE OK Sectional Meeting, Stillwater, OK, March 8, 2024.

CO3. **Datta, S.,** Taghvaeian, S., Sibley, M., Long, M., Gholson, D., Yost, M., Allen, N., Bali, Khaled, & Zaccaria, D. (2023). Perception of US Farmers Towards Water Conservation in Surface Irrigation. 2023 ASABE International Annual Meeting, Omaha, Nebraska, July 9-12, 2023.

CO4. Islam, M. T., Munmun, T. H., Rahman, M. M., Adham, A.K.M., & **Datta, S.** (2023). Investigating the Effects of Raised Bed Width on Rice Cultivation in Bangladesh: Water Use and Yield. 2023 ASABE International Annual Meeting, Omaha, Nebraska, July 9-12, 2023.

CO5. Mehata, M., Taghvaeian, S., & **Datta, S.** (2022). Effect of Soil Data Accuracy on Irrigation Requirements of Major Crops in Oklahoma Using a Soil Water Balance Model. 2022 ASABE International Annual Meeting, Houston, Texas, July 17-20, 2022.

CO6. **Datta, S.** & Taghvaeian, S. (2022). Soil Water Sensors for Irrigation Scheduling in the United States: A Systematic Review of Literature. 2022 ASABE International Annual Meeting, Houston, Texas, July 17-20, 2022.

CO7. Mehata, M., Taghvaeian, S., **Datta, S.,** Bonham, R., & Ochsner, T. (2022). Performance Assessment and Application of Soil Water Sensors Under Variable Field Conditions. 2022 ASABE International Annual Meeting, Houston, Texas, July 17-20, 2022.

CO8. Taghvaeian, S., Mehata, M., **Datta, S.**, & Bonham, R. (2022). Estimating Water use of Irrigated Cotton Based on the Soil Water Content Data. 2022 ASCE EWRI World Environmental & Water Congress, Atlanta, Georgia, June 5-8, 2022.

CO9. Mehata, M., Taghvaeian, S., **Datta, S.,** & Moriasi, D. (2019). Modeling Soil Moisture Dynamics to Improve Irrigation Management. 2019 University of Oklahoma International WaTer Conference, Norman, Oklahoma, September 16-17, 2019.

CO10. **Datta, S.,** Taghvaeian, S., Mehata, M., & Moriasi, D. (2019). Irrigation Water Fluxes in an Agricultural Watershed in Central Oklahoma. 2019 ASABE Annual International Meeting, Boston, Massachusetts, July 7-10, 2019.

CO11. **Datta, S.,** Taghvaeian, S., Mehata, M., & Moriasi, D. (2018). Irrigation Water Fluxes in Fort Cobb Reservoir Experimental Watershed. 2018 39th Oklahoma Governor's Water Conference, Midwest City, Oklahoma, December 5-6, 2018.

[a] CO: Conference Oral Presentations – numbered as CO1, CO2, …, COn. Presentation PDF files are available upon reasonable request.

CO12. Mehata, M., Taghvaeian, S., **Datta, S.,** & Moriasi, D. (2018). Use of a Computer Model to Simulate Soil Water Content in Irrigated Fields. 2018 39th Oklahoma Governor's Water Conference, Midwest City, Oklahoma, December 5-6, 2018.

CO13. Taghvaeian, S., Boman, R., Masasi, B., **Datta, S.,** & Stivers, J. (2018). Impact of Irrigation Termination Date and Soil Moisture on Cotton Yield. 2018 ASABE Annual International Meeting, Detroit, Michigan, July 29 – August 1, 2018.

CO14. **Datta, S.,** & Taghvaeian, S. (2018). Performance of Soil Moisture Sensors Under Field Conditions. 2018 ASABE Annual International Meeting, Detroit, Michigan, July 29 – August 1, 2018.

CO15. **Datta, S.,** Taghvaeian, S., Stivers, J., Ochsner, T., & Moriasi, D. (2017). Performance Evaluation of Soil Moisture Sensors Under Field Conditions. 2017 38th Oklahoma Governor's Water Conference, Norman, Oklahoma, October 31 – November 1, 2017.

CO16. **Datta, S.,** Rahman, S., Borhan, M.S., Saini-Eidukat, B., Cihacek, L., & Ringwall, K. (2016). Quantification and Characterization of Particulate Matter Generated from Unpaved Roads in the Oil Development Area of Western North Dakota. 2016 ASABE Annual International Meeting, Orlando, Florida, July 17-20, 2016.

3.3.2. Poster Presentations[a]

CP1. Kennedy, T., & **Datta, S.** (2025). Lake Lugert-Altus: Sustaining Irrigated Agriculture in Southwestern Oklahoma. 2025 OSU Undergraduate Research Symposium, Stillwater, OK, April 22, 2025.

CP2. Janardhan, A. Y. K., & **Datta, S.** (2025). Oklahoma Irrigation Scheduler: Paving the Path for Sustainable Water Management. 2025 ASABE OK Sectional Meeting, Stillwater, OK, March 7, 2025.

CP3. Kettner, J., Janardhan, A. Y. K., & **Datta, S.** (2025). Accuracy of Irrigation Scheduling Recommendations from Historical Weather Forecasts. 2025 ASABE OK Sectional Meeting, Stillwater, OK, March 7, 2025.

CP4. Pandit, A., **Datta, S.** (2025). [Poster] Seasonal Irrigation Estimation Using Satellite Products. 2025 ASABE OK Sectional Meeting, Stillwater, OK, March 7, 2025.

CP5. Janardhan, A. Y. K., **Datta, S.** (2024). [Poster] Oklahoma Irrigation Scheduler: Paving the Path for Sustainable Water Management. 2024 Oklahoma Governor's Water Conference, Norman, OK, November 19-20, 2024.

CP6. Kundu, P. K., **Datta, S.,** & Sadler, J. (2024). [Poster] Canopy Temperature Prediction using State-of-the-Art Machine Learning Approaches for Irrigation Management of Cotton. 2024 Oklahoma Governor's Water Conference, Norman, OK, November 19-20, 2024.

CP7. Pandit, A., **Datta, S.,** Ochsner, T. E., & Wagle, P. (2024). [Poster] Comparison of Field-Scale Evapotranspiration Estimates Based on In-situ Soil Moisture Sensors and Remote-sensing Approaches. 2024 Oklahoma Governor's Water Conference, Norman, OK, November 19-20, 2024.

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[a] CP: Conference Poster Presentations – numbered as CP1, CP2, …, CPn. Presentation PDF files will be made available upon reasonable request.

CP8. Quellar, G., Kundu, P. K., & **Datta, S.** (2024). [Poster] Mapping Crop Water Use in Lugert-Altus Irrigation District. 2024 ASABE OK Sectional Meeting, Stillwater, OK, March 8, 2024.

CP9. Kennedy, T., Pandit, A., & **Datta, S.** (2024) [Poster] Impacts of Changing Weather Patterns on Irrigation Water Demand in Oklahoma. 2024 ASABE OK Sectional Meeting, Stillwater, OK, March 8, 2024.

CP10. Kundu, P. K., Pandit, A., & **Datta, S.** (2024). [Poster] Machine Learning to Estimate Plant Canopy Temperature for Effective Irrigation Scheduling. 2024 ASABE OK Sectional Meeting, Stillwater, OK, March 8, 2024.

CP11. Pandit, A., Kundu, P. K., & **Datta, S.** (2024). [Poster] Advancements in Soil Moisture Prediction Through Machine Learning Models in Irrigated Fields. 2024 ASABE OK Sectional Meeting, Stillwater, OK, March 8, 2024.

CP12. Bonham, R., Mehata, M., **Datta, S.,** & Taghvaeian, S. (2022). [Poster] Effectiveness of Soil Moisture Sensors to Improve Irrigation Management. 2022 Research Day at the Capitol, (Virtually held), March 3, 2022.

CP13. Bonham, R., Taghvaeian, S., & **Datta, S.** (2021). [Poster] Comparing Consumptive Water Use of Furrow and Drip Irrigated Cotton Fields. 2021 41st Oklahoma Governor's Water Conference and Research Symposium, (Virtually held), December 1-2, 2021.

CP14. Mehata, M., Taghvaeian, S., **Datta, S.,** Bonham, R., & Ochsner, T. (2021). [Poster] Evaluating the Accuracy of Soil Moisture Sensors and Their Application for Irrigation Management. 2021 41st Oklahoma Governor's Water Conference and Research Symposium, (Virtually held), December 1-2, 2021.

CP15. Ochsner, T. E., Meek, A., Muller, L., Weckler, P., **Datta, S.,** Taghvaeian, S., Sibley, M., & Liesel, R. (2020). [Poster] Use of Soil Moisture Data in Agricultural Water Management: On-farm Sensor Research and Perspectives from Irrigators. 2020 AGU Fall Meeting, (Virtually held), December 1-17, 2020.

CP16. Meek, A., Muller, L., Ochsner, T., Taghvaeian, S., Weckler, P., & **Datta, S.** (2020). [Poster] Wireless Soil Moisture Sensor Performance in Irrigated Cropland: On-Farm Evaluation. 2020 ASA, CSSA and SSSA International Annual Meeting, (Virtually held), November 9-13, 2020.

CP17. **Datta, S.,** & Taghvaeian, S. (2020). [Poster] A Critical Review of Soil Moisture Sensor Applications in Irrigation Management. 2020 ASABE OK Sectional Meeting, Stillwater, OK, February 20, 2020.

CP18. Alghamdi, R, **Datta, S.,** Cihacek, L, & Day, S. (2019). [Poster] Changes in Crop and Soil Management Patterns on High Wind Erosion Risk Soils over 2 Decades. 2019 ASA, CSSA, and SSSA International Annual Meeting, San Antonio, Texas, November 10-13, 2019.

CP19. Mehata, M., Taghvaeian, S., **Datta, S.,** & Moriasi, D. (2019). [Poster] Simulating Soil Moisture Fluctuations under Irrigated Crops Using HYDRUS Model. 2019 ASABE Annual International Meeting, Boston, Massachusetts, July 7-10, 2019.

CP20. **Datta, S.**, & Taghvaeian, S. (2018). [Poster] Performance of Soil Moisture Sensors Under Field Conditions. 2018 ASABE OK Sectional Meeting, Stillwater, OK, February 23, 2018.

4. TEACHING ACTIVITIES

4.1. Overview

Dr. Datta aims to foster an engaging and inclusive learning environment that inspires students to think critically and solve problems and develop a deeper understanding of their field of study. Applying a combination of flipped classroom, hands-on activities, and interactive lectures bringing theoretical knowledge with real-word applications, Dr. Datta strives to cultivate curiosity, creativity, and collaboration among students. He teaches two major courses within Biosystems and Agricultural Engineering - BAE and Agricultural Systems Technology - AST curriculums at OSU and participates in various student recruitment activities.

4.2. Taught Courses[a]

At Oklahoma State University

TC1. AST 4203, 5200: Agricultural Water Management

Currently being taught, feedback available after December 12, 2025.

TC2. AST 4203, 5200: Agricultural Water Management

Term	UG[b]	G[c]	Mean Course Evaluation Scores		
			Enhanced Learning[d]	Overall Course Rating[e]	Overall Instructor Rating[f]
Fall 2024	12	3	3.20	3.20	3.60

Short summary: In Fall 2024, Dr. Datta designed this course from grounds up based on the comments from the students in Fall 2023. Following are the modifications since last time to improve instructional quality:

- Inclusion of a weekly laboratory session (1 hour 50 minutes), in addition to two shortened weekly lecture sessions, 50 minutes each. Dr. Datta, with course Teaching Assistant, Mr. Jacob Kettner (a BAE[g] Ph.D. student), developed six hands-on sessions on several topics such as soil moisture measurement and mapping, distribution uniformity.
- Research tour to Cimmaron Valley Research Station in Perkins, OK to see a wide variety of irrigation systems in action.
- Guest lectures from five faculties covering soil moisture, irrigation systems, water quality, flood event analysis, salinity, and drainage.

[a] TC: Taught courses – numbered as TC1, TC2, …, TCn.
[b] Number of Undergraduate Students
[c] Number of Graduate Students
[d] Mean response to the statement: Presentation of course content enhanced my learning of the subject; Scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[e] Mean response to the statement: I would describe this as an excellent course; Scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[f] Mean response to the statement: I would describe this instructor as an excellent teacher; Scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[g] Biosystems and Agricultural Engineering

- Inclusion of a workout session of mathematical problems before homework assignments are handed out in Canvas.
- Grades on Canvas, updated on a weekly basis.
- Modified grading structure, providing more weight on homework and in-class quiz and putting less weight on exams to ensure the students put more equal efforts on different topics as they progress through the semester.

Based on observation of students' performance by Dr. Datta and student feedback at the end of the semester indicated the following possible improvements for Fall 2025:

- Smaller number of guest lectures; students liked the speakers, but they wanted Dr. Datta to do more lecture/lab sessions.
- To retain students' attention, end-of-class quizzes could help and prove beneficial.
- Students complained about the lecture room (BAE Lab Building Room#129) because of noise issues related to air conditioner. Dr. Datta worked on moving the lecture sessions to Agricultural Hall Building to facilitate learning.

Term	UG	G	Mean Course Evaluation Scores		
			Enhanced Learning	Overall Course Rating	Overall Instructor Rating
Fall 2023	14	6	N/a	N/a	3.17[a]

Short summary: In Fall 2023, Dr. Datta co-taught this course with Dr. Paul Weckler (now retired). The course was 'Lecture" only, meeting two times a week for 75 minutes, each. Some of the comments provided by several students are as follows:

- Lack of hands-on sessions made visualizing the several theoretical concepts difficult (e.g., distribution uniformity, soil moisture measurement, etc.).
- Requested spending more time going through mathematical problems before assigning the homework.
- Lack of frequent posting of grades on Canvas made tracking course progress challenging.

TC3. BAE 5030: Advanced Techniques in Irrigation Water Management

Term	G	Mean Course Evaluation Scores		
		Enhanced Learning	Overall Course Rating	Overall Instructor Rating
Spring 2025	5	4.50	4.25	4.00

[a] Did not receive enough responses (only 2) in OSU Student Survey of Instruction (OSU SSI). Dr. Datta conducted his own survey through Qualtrics. By December 12, 11 students completed the survey. Therefore, the rating is not official and only the mean score for the last statement is provided.

Short summary: Dr. Datta designed this course from scratch and taught it in Spring 2025 with curriculum on advanced techniques on irrigation water management such as soil moisture sensors, canopy temperature sensors, soil water balance models, and crop models. The course was "Lecture" only taught for 2 hours 50 mins on each Thursday. Some observations based on student feedback were as follows:

- Students liked the Extension Factsheet development and indicated that they gained deeper appreciation for the subject.
- Completion of all contents outlined in syllabus and organization of course contents were recommended.

Based on the feedback, planned future modifications for Spring 2026 were as follows:

- Requested change in class date and format to Monday and Wednesday having two Lecture sessions and one laboratory session on Wednesday, to have more discrete interactions with the students.
- Workload balanced and organized homework created beforehand will be handed out and mentioned in syllabus.
- Efforts will be made to balance the course contents and to make sure that all contents are covered throughout the semester.

TC4. SOIL 5583: Soil Physics Measuring Techniques

Short summary: As Graduate Teaching Assistant (GTA) in Spring 2019, Dr. Datta taught this course to complete Ph.D. degree requirement with Instructor Dr. Tyson Ochsner in Plant and Soil Sciences Department. The course had 3 graduate students. As GTA, Dr. Datta developed two completely new laboratory exercises on soil electrical conductivity measurements, along with supervising other previously developed laboratory exercises. Rating as GTA is not available through OSU SSI (official survey).

4.3. Guest Lectures[a]

At Oklahoma State University

GL1. **Datta, S.** Fall 2024. Delivered a 1-hour 50-minute combined lecture-laboratory session on "Importance of Irrigation Research" and "Soil Moisture Mapping" in the course BAE 1011 – Introduction to Biosystems Engineering. ~12 BAE students per session. 2 sessions. December 3 & 4, 2024.

GL2. **Datta, S.** Fall 2024. Delivered a 50-min lecture on "Irrigation Water Quality and Impacts of Marginal Water on Crop Yield" in the course BAE 4324 – Water Quality Engineering. ~12 BAE students. November 12, 2024.

GL3. **Datta, S.** Spring 2024. Delivered a 1-hour 50-minute laboratory session on "Measuring temperature and controlling LEDs using Campbell Scientific Dataloggers" in AST 4303 – Sensors and Controls for Agriculture. ~12 AST students. February 7, 2024.

[a] GL: Guest Lectures – numbered as GL1, GL2, …, GLn.

GL4. **Datta, S.** Fall 2021. Delivered two 1-hour 15-minute lecture sessions on "Irrigation Principles and Systems" in the course AST 4203 – Agricultural Water Management. ~12 AST students. October 19 & 21, 2021.

GL5. **Datta, S.** Fall 2021. Delivered one 50-minute lecture session on "Design Considerations for Irrigation Systems" in the course BAE 4314 – Design Hydrology. ~12 BAE students. November 2 & 4, 2021.

GL6. **Datta, S.** Fall 2017. Delivered one 2-hour 50-minute lecture session on "Irrigated vs Rainfed Farming – Food-Water Tradeoff in Semi-arid Watershed." in the course NREM 5483 – Ecohydrology. ~10 students from different disciplines. October 23, 2017.

4.4. Student Recruitment Events[a]

At Oklahoma State University[b]

SR1. Mirchi, A., & **Datta, S.** (2023). Demonstration of Streambank Erosion through BAE Stream Trailer. OSU College of Engineering, Architecture, and Technology (CEAT) Summer Bridge Engineering Student Recruitment Program[c]. ~15 participants. August 4, 2023.

SR2. Sadler, A., Khodkar, K., & **Datta, S.** (2023). Demonstration of Soil Moisture Sensing. OSU CEAT Summer Bridge Engineering Student Recruitment Program. ~10 students, August 4, 2023.

SR3. Samimi, M., **Datta, S.,** Mirchi, A., &Taghvaeian, S. (2021). Demonstration of Streambank Erosion through BAE Stream Trailer. OSU CEAT Summer Bridge, Discovery Day[d], and Upward Bound [e]programs. ~20 students. July 30, August 2, 2021.

SR4. Taghvaeian, S., & **Datta, S.** (2019). Demonstration of Soil Moisture Mapping. OSU CEAT Summer Bridge Engineering Student Recruitment Program. ~7 students. July 31, 2019.

At North Dakota State University

SR5. **Datta, S.,** Borhan, M. S., & Rahman, S. (2015). Demonstration of Air Quality Monitoring Techniques. North Dakota State University-Nueta Hidatsa Sahnish College Combined Air Quality Monitoring Program. 3 students. ~October, 2015.

[a] SR: Student Recruitment events – numbered as SR1, SR2, …, SRn.
[b] No SR activities during 2024 because of move to new Agricultural Hall building during summer.
[c] Summer bridge program helps guide first-year freshman students who have been accepted to OSU.
[d] Discover Day engages high school students to explore engineering disciplines through hands-on activities.
[e] Upward Bound assists high school students in achieving a college education.

5. EXTENSION ACTIVITIES

5.1. Overview

Dr. Datta's Extension efforts are focused on transferring and communicating scientific knowledge to stakeholders such as agricultural producers and state agencies facing issues with irrigation water and its scheduling on both field and regional scales; to policymakers to help with formulating water allocation strategies for the state and beyond; and to scientific community to contribute to existing and new knowledge on irrigation management through application-based, stakeholder-driven integrated research and Extension projects. Dr. Datta's primary responsibilities, among other responsibilities, as they relate to Land-grant university's mission of Extension are (1) developing and promoting "Oklahoma Agricultural Scientific Irrigation Scheduler – OASIS" Tool for enhanced field-scale water management for irrigated fields within Oklahoma, (2) actively participating in Oklahoma Master Irrigator program by developing and delivering education materials on efficient ways to conserve irrigation water while maximizing farm profitability, and (3) providing scientific recommendations to agricultural irrigators in Oklahoma through conducing irrigation water uniformity audits at irrigated fields.

5.2. Peer-reviewed Extension Factsheets[a]

5.2.1. Extension Factsheets Submitted

ES1. N/a

5.2.2. Extension Factsheets Published Online

EO1. Ashrafi, A., Ochsner, T., Krueger, E. S., & **Datta, S.** (2025). Determining Field Capacity Using Continuous Soil Water Content Data. Oklahoma Cooperative Extension Service, PSS-2403 Download from OSU

EO2. **Datta, S.,** Kettner, J., Mehata, M., & Taghvaeian, S. (2025). Irrigated Agriculture in Oklahoma. Oklahoma Cooperative Extension Service, BAE-1530. Download from OSU

EO3. Frazier, S., & **Datta, S.** (2024). Understanding the Results of Master Irrigator Center Pivot Energy Efficiency Test Results. Oklahoma Cooperative Extension Service, BAE-1411. Download from OSU

EO4. **Datta, S.,** Taghvaeian, S., & Stivers, J. (2017). Understanding Soil Water Content and Thresholds for Irrigation Management. Oklahoma Cooperative Extension Service, Issue: BAE-1537, Stillwater, OK, USA. Download from OSU

5.3. Extension Presentations[b]

EP1. **Datta, S.** (2025). Oklahoma Irrigation Scheduler. 2025 Oklahoma Master Irrigator Program, January 29, 2025. (19 participants)

EP2. **Datta, S.** (2025). Soil Water Relationships and Irrigation Scheduling. 2025 Oklahoma Master Irrigator Program, January 22, 2025. (17 participants)

[a] ES: Extension Factsheets submitted/under review – numbered as ES1, ES2, …, ESn; EO: Extension Factsheets Published Online – numbered as EP1, EP2, …, EPn. These items are in reverse chronological order.
[b] EP: Extension Presentations – numbered as EP1, EP2, …, EPn. Presentation PDF files will be available upon reasonable request. These items are in reverse chronological order.

EP3. **Datta, S.** (2024). Soil Water Relationships. 2024 Oklahoma Commissioners of the Land Office REMD Meeting, August 2, 2024. (15 participants)

EP4. **Datta, S.** (2024). Irrigation Research Overview and Potential Needs. OSU Field Research and Service Unit In-Service Training, Stillwater, OK, March 12, 2024. (~20 participants).

EP5. **Datta, S.** (2024). Soil-water Relationships. 2024 Oklahoma Master Irrigator Program, Woodward, OK, January 30, 2024. (25+ participants)

EP6. **Datta, S.** (2022). Irrigation Water Management in Maine: Why Now and How? Agricultural Water Management Board Meeting, Department of Agriculture, Conservation, and Forestry, (virtually held), October 27, 2022 (15 participants)

EP7. **Datta, S.** (2022). Engineered Tools & Approaches for Improved Wild Blueberry Production in Maine. Wild Blueberry Fresh Pack Line Meeting, October 11, 2022. (10 participants)

EP8. **Datta, S.** (2022). Webinar: Irrigation for Small-Scale Farmers: What do You Need to Know to Install a New Irrigation System? UMaine Cooperative Extension, (virtually held), August 22, 2022. (21 participants)

EP9. **Datta, S.** (2022). Importance of Irrigation for Wild Blueberry Producers in Maine. 2022 Blueberry Hill Farm Field Day, Jonesboro, ME, July 14, 2022. (80+ participants)

EP10. **Datta, S.** (2022). Integration of Engineered Approaches to Improve Profitability of Wild Blueberry Production in Maine. 2022 Wild Blueberry Commission of Maine Mid-Year Meeting, June 22, 2022. (15+ participants)

EP11. **Datta, S.** (2022). Battle Climate Change: How Irrigation Can Help Maine Vegetable and Fruit Growers. 2022 Maine Vegetable and Small Fruit Growers' Association Twilight Meeting, Auburn, ME, June 7, 2022. (35+ participants)

5.4. Extension Service

Oklahoma Master Irrigator Water Uniformity Audit		
Year	Conducted	Reports sent to producers
2024	1	1

6. TOOLS DEVELOPED

6.1. Tools

- Oklahoma Agricultural Scientific Irrigation Scheduler – OASIS Tool

  Status: Under deployment phase (expected to be online by Summer of 2026)

  Address: https://irrigation.okstate.edu

  Short summary: Oklahoma Irrigation Scheduler is a completely new irrigation scheduling tool, built from ground up, for agricultural irrigators in Oklahoma, but with versatility to be applied anywhere within the U.S. This tool is built on dual-crop coefficient-based soil water balance model that can provide more accurate estimate of crop water use – evapotranspiration (ET) and let users schedule irrigations based on Oklahoma Mesonet weather data and in-field irrigation data. This tool is under development (pending website deployment). Once deployed, the producers would be able to manage irrigation decisions for a large number of fields. More improvements for this tool are on the horizon (e.g., Growing Degree Days based approach, soil water data infusion, OpenET integration) and will be implemented in near future.

7. STUDENT SUPERVISION ACTIVITIES

7.1. Students Directly Advised[a]

7.1.1. Currently Students

SDA1. Jacob Kettner

Program: Ph.D. in Biosystems & Agricultural Engineering

Title: Graduate Research & Teaching Assistant

Starting semester: Fall 2024

Expected graduation: Fall 2028

Short summary: Mr. Kettner is working on developing irrigation scheduling strategies for major summer crops in Southern Great Plains using soil water balance models (e.g., pyfao56). He will be evaluating the impact of the variabilities within various input parameters on the model outputs. These inputs include, but not limited to: weather data forecasts and soil data to conduct sensitivity analysis by analyzing the resultant model outputs.

SDA2. Alok Pandit

Program: M.S. in Biosystems & Agricultural Engineering

Title: Graduate Research Assistant

Starting semester: Spring 2024

Expected graduation semester: Spring 2026

Short summary: Mr. Pandit is utilizing satellite products (e.g., OpenET) to quantify crop water use, evapotranspiration, using in-situ soil moisture data to advance water metering research in Oklahoma and beyond.

SDA3. Abinava Yeshwanth Kalayambakam Janardhan

Program: M.S. in Computer Science

Title: Graduate Research Assistant

Starting semester: Fall 2023 (Funded on Dr. Datta's program since May, 2023)

Expected graduation semester: Fall 2025

Short summary: Mr. Janardhan is investigating how machine/deep learning approaches can accurately estimate multi-depth soil moisture in irrigated fields within Oklahoma. He will use publicly available soil moisture dataset such as Soil Moisture Active Passive from NASA coupled with soil textural data from USDA SSURGO database to increase soil moisture estimation accuracy of state-of-the-art machine learning approaches.

SDA4. Tatumn Kennedy

Program: B.S. in Biosystems & Agricultural Engineering

Title: Undergraduate Research Assistant[b]

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[a] SDA: Students directly advised by Dr. Datta – expressed as SDA1, SDA2, …, SDAn. These students were fully funded by Dr. Datta's program directly for monthly stipend, tuition waiver, and graduate health insurance.

[b] Undergraduate students are/were partially funded as an hourly employee, unlike graduate students.

Starting semester: Fall 2022 (Funded on Dr. Datta's program since January, 2024)

Expected graduation semester: Spring 2026

Short summary: Ms. Kennedy is working on quantifying crop water use among major irrigation systems in Southwest Oklahoma on larger scale. She will be collecting in-situ irrigation systems data for Lugert-Altus Irrigation District and digitize the data into spatial dataset to be integrated into crop water use database from OpenET platform.

7.1.2. Past Students

SDA5. Palash Kumar Kundu

Program: M.S. in Biosystems & Agricultural Engineering

Title: Graduate Research Assistant

Starting semester: Spring 2024

Expected graduation semester: Summer 2025

Short summary: Mr. Kundu is focused on evaluation of machine/deep learning approaches in estimating plant canopy temperature in cotton for build irrigation scheduling tool.

Post-graduation: Ph.D. student at Michigan State University

SDA6. Gillian Quellar

Program: B.S. in Biosystems & Agricultural Engineering

Title: Undergraduate Research Assistant

Starting semester: Fall 2022 (Funded on Dr. Datta's program since January – May, 2024)

Expected graduation semester: Spring 2026

Short summary: Ms. Quellar worked on generating preliminary results on quantifying ET in Southwest Oklahoma using OpenET platform.

7.2. As Member of Graduate Committee[a]

7.2.1. Current Students

GC1. Naiem Sheikh
Ph.D. Student in Geology
Anticipated Graduation: Fall 2028

GC2. Digvijay Mohite
Ph.D. Student in Plant and Soil Science
Anticipated Graduation: Fall 2026

GC3. Kasra Khodkar
Ph.D. Student in Biosystems & Agricultural Engineering
Anticipated Graduation: Spring 2026

GC4. Muhammad Umar Akbar
Ph.D. Student in Biosystems & Agricultural Engineering
Anticipated Graduation: Spring 2026

[a] GC: Students Supervised as Member of Graduate Committee – represented as GC1, GC2, …, GCn.

GC5. Navdeep Kaur Saasan
Ph.D. Student in Biosystems & Agricultural Engineering
Anticipated Graduation: Spring 2026

GC6. Cole Diggins
Ph.D. Student in Soil Sciences
Anticipated Graduation: Fall 2025

GC7. Mark Barbadillo
Ph.D. Student in Soil Science
Anticipated Graduation: Spring 2026

7.2.2. Past Students

GC8. Mamata Pandey
M.S. Student in Biosystems & Agricultural Engineering, Graduated: Summer 2025

GC9. Jacob Kettner
M.S. Student in BAE, Graduated: Spring 2024
Outcome: Joined Dr. Datta's group as Ph.D. Student in Fall 2024.

7.3. Student Organization Advising

- Faculty Advisor
  Bangladesh Student Association at Oklahoma State University (~120 students)
  Fall 2023 – Present

8. SERVICE & RECOGNITION

8.1. Proposal Reviewer

- 2023 University of Maine PFAS Pilot Research Fund

8.2. Journal Manuscript Reviewer

- Journal of the ASABE
- MDPI: Sensors
- MDPI: Water
- MDPI: Agriculture
- Springer Nature: Irrigation Science
- Agricultural Water Management
- Environmental Research Letters
- Biosystems Engineering
- ASCE: Journal of Irrigation and Drainage Engineering
- Resources, Environment, and Sustainability
- Journal of Natural Resources and Agricultural Ecosystems
- Applied Engineering in Agriculture

8.3. Editorial Boards

- Associate Editor, Natural Resources and Environmental Systems, American Society of Agricultural and Biological Engineers 2024 – Present

8.4. Professional Membership

- American Society of Agricultural and Biological Engineers 2016 – Present
- Alpha Epsilon Honor Society 2016 – Present
- Institute of Engineers, Bangladesh 2014 – Present

8.5. Committees

- ASABE NRES-24 Irrigation Group 2022 – Present
- ASCE Evapotranspiration, Irrigation, and Hydrology Task Committee 2020 – Present
- University Committees
  - Search Committee:
    - Extension State Program Specialist in Mesonet Agriculture Outreach 2025
    - Soil & Water Conservation Extension Specialist, Plant & Soil Sciences 2024
  - Departmental Committee:
    - BAE Graduate Committee 2023 – Present
    - BAE Awards Committee 2023 – 2024
    - BAE Research and Technology Development Committee 2023 – Present
    - BAE RPT&CR Committee 2024 – Present
    - BAE Digital Presence & Communication Committee 2024 – Present

8.6. Awards[a]

A1. Undergraduate student 'Tatumn Kennedy' won the first prize for poster presentation on "Impacts of Changing Weather Patterns on Irrigation Water Demand in Oklahoma" at 2024 ASABE OK Sectional Meeting.

A2. Undergraduate Student 'Rio Bonham' won the first prize on poster presentation on "Comparing Consumptive Water Use of Furrow and Drip Irrigated Cotton Fields" at 2021 Oklahoma Governor's Water Conference.

[a] A: Awards – represented as A1, A2, … , An.

A3. 2020 Outstanding Graduate Student at Oklahoma State University College of Engineering, Architecture, and Technology for maintaining a foundation of academic excellence and leadership.
A4. 2020 DGF for Academic Excellence at Oklahoma State University.
A5. 3rd Place in 3MT (3-minute-thesis) competition in 2020 ASABE OK Sectional Meeting.
A6. 2019 Irrigation Association E3 Learner Education and Travel Award.
A7. 2019 DGF for Academic Excellence at Oklahoma State University.
A8. 3rd Place in 3MT (3-minute-thesis) competition in 2019 ASABE OK Sectional Meeting.
A9. 2018 American Society of Agricultural and Biological Engineers (ASABE) 'Blue Ribbon Educational Award' for Extension Publication "Understanding Soil Water Content and Thresholds for Irrigation Management"
A10. 2018 Distinguished Graduate Fellowship (DGF) for Academic Excellence at Oklahoma State University
A11. Frank Bain Scholarship for Academic Excellence at North Dakota State University
A12. Dean's List for Academic Excellence at Bangladesh Agricultural University
A13. Dean's List for Academic Excellence at Bangladesh Agricultural University