

SAHILA BEEGUM

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Education/Research			
Program	Institution	Specialization/Details	Year
Post Doc.	University of Nebraska-Lincoln	Soil-Plant Atmospheric Continuum Modeling	2022
Ph.D.	Indian Institute of Technology-IIT Madras	Hydraulics & Water Resources Engineering	2019
Researcher	Helmholtz AGRC, Julich, Germany	DAAD-IGCS Visiting Researcher- Simulation modeling of soil-crop processes	2018
Researcher	University of California, Riverside, USA	Fulbright Researcher- Simulation modeling of soil processes	2016-2017
M-Tech	Kerala University	Hydraulics Engineering	2013
B-Tech	CUSAT University	Civil Engineering	2011

Professional positions			
Position/title	Institution		Year
Research Assistant Professor	University of Nebraska Lincoln (UNL), USA		2023-Present
Courtesy Research Assistant Professor	Department of Biological Systems Engineering, UNL, USA		2024 oct-present
Visiting scientist (contract)	USDA-ARS, Beltsville, MD, USA		2020-Present
Post-doctoral Research Associate	University of Nebraska Lincoln, USA		2020- 2023
Senior Research Associate	IIT Madras, India		2019-2020
DAAD-IGCS Visiting Researcher	Helmholtz AGRC, Julich, Germany		2018
Fulbright Visiting Researcher	University of California, Riverside, USA		2016-2017
Teaching Assistant	IIT Madras, India		2015-2018
Research Project Associate	IIT Madras, India		2013
Teaching Assistant	Kerala University, India		2011-2013
Project Associate	CWRDM, India		2011

Awards and honors		
Award	Details	Year
Fulbright fellowship	Researcher at the University of California Riverside, USA	2016-2017
DAAD-IGCS fellowship	Visiting researcher Forschungszentrum Jülich, Helmholtz Association of German Research Centres, Jülich, Germany	2018

Berkner fellowship	Funding received for travel and presentation at the American Geophysical Union's (AGU) 2014 Science, Policy Conference, Washington, DC, USA	2014
HRD scholarship	Scholarship for carrying out Ph.D. at IIT Madras, India	2014-2018
Best presentation award	National Conference on Emerging Technologies, Kerala University, India	2013
First rank holder	M Tech, Kerala University, India	2014
MCM scholarship	Scholarship for carrying out M-Tech, KU, India	2011-2013
Second rank holder	B-Tech, CUSAT University	2013

Grants

- USDA-UNL Non-assistance Cooperative Agreement Project investigator, On-farm crop and soil model application \$624,000 (awarded)
- USGS 104g, Water Resources Research Act Program national competitive grants, Physics-based crop, soil, and groundwater modeling to study groundwater contamination in agricultural regions, \$288,030 (Co-PI, awarded 2024)
- USGS 104b, Managing irrigated cropping systems for drought resilience and vadose zone nitrate control: Field evaluation and modeling; amount awarded: \$30,000 (Co-PI, awarded 2023)
- USDA-NIFA, Farmer-Driven and Participatory Research with Modeling to address Persistent Groundwater Nitrate Contamination \$749,783 (Co-PI, submitted, 2025)
- USDA NIFA DSFAS Seed grant proposal 2025. ML-Supported Evaluation of Agricultural Management Trade-Offs for Framework Development (Co-PI), submitted, 2015)

Professional societal associations

Details	Since
American Society of Agricultural and Biological Engineers (ASABE)	2017, 2023-Present
American Geophysical Union (AGU)	2014, 2021-Present
American Society of Agronomy (ASA)	Since 2021
Soil Science Society of America (SSSA)	Since 2021
AASIO: The Association of Agricultural Scientists of Indian Origin	2023-Present

Leadership and service activities

Lead trainer at two crop modeling training workshops	2025
Mentor for WARI fellow	2023
Mentoring a visiting scholar, University of Nebraska-Lincoln, USA	
Mentored a Master's student at IIT Madras, India	2015
Peer reviewer (25 manuscripts)	2017-2023
Delivered invited lectures at multiple organizations.	
Search chair and member of the search committee for Postdoctoral Associate	2023, 2024
Coordinated SWAT international conference, IIT Madras, India	2018
Section chair International Conference ICITES, India	2021
Technical committee member ICITES conference, CUSAT, India	2021
External member in the advisory committee for TIST, CUSAT, India	2021-2022

Volunteered for San Diego Foodbank Food for Thought, San Diego, USA	2017
Volunteered to be a mentor in the ASA-CSSA-SSSA Mentorship Program	2022
Volunteered to evaluate Gerald O. Mott Award nominee (external member)	2022
Co-developed three simulation models and made available for public use	2018, 2023
Heliyon Soil Science journal-Cell Press, Advisory board member	2024
Frontiers in Agronomy, Review editor	2023
Frontiers in Soil Science, Review editor	2023
Nature Scientific Report, guest editor, Editorial board member	2023
Associate Editor for the Soil Science Society of America Journal (SSSAJ), Soil Physics & Hydrology Division	2026

Other recognitions

A simulation model (unsaturated-saturated soil zone model) that I developed during my Ph.D. is currently being taken up by a research group at the University of California, Riverside, to extend to a large watershed scale, including hillslope processes. ([software webpage](#))

A novel fiber quality simulation model developed (in collaboration with USDA-ARS and Mississippi State University, Mississippi State) and integrated into a process-based crop model was recognized in USDA-ARS highlights and several news media.

A research work I co-authored was selected as a spotlight in the Water Resource Research Journal and published in EOS research news ([Modeling Mulch to Understand Agricultural Soil](#)).

Research Accomplishments

Publications	41
Peer-reviewed journal articles	36
Book chapters	5
Presentations at conference	30
Volunteered presentations	27
Invited presentations	3
Academic profile (based on Google Scholar)	
Citations	441
h-index	13
i-10- index	16
Professional contributions	
Three Soil-Crop-Atmospheric Continuum-related software/source codes were co-developed and added to publicly available platforms	3
Invited talks	7

Journal publications

1. **Beegum, S.**, Burra, K., Das, S., Kapoor, A., & Ray, C. (2026). Challenges in mechanistic modeling of methane production and release in agricultural soils: Perspective on limitations and opportunities. *Critical Reviews in Environmental Science and Technology*, 1-32.
2. **Beegum S.**, Muhammad A.H, Reddy K.R., (2025) Assessing fiber quality variability among modern upland cotton cultivars and integrating it into the GOSSYM-based fiber quality simulation model. *Journal of Cotton Research*. <https://doi.org/10.1186/s42397-025-00221-5>

3. Wang, Z., Timlin, D., **Beegum, S.**, .. & Horton, R. (2025). TDR-Transformer: A transformer neural network model to determine soil relative permittivity variations along a time domain reflectometry sensor waveguide. *Computers and Electronics in Agriculture*, 237, 110730. <https://doi.org/10.1016/j.compag.2025.110730>
4. Rahman, A. S., Šimůnek, J., Bradford, S. A., Ajami, H.... & **Beegum, S.** (2025). A new externally coupled, physically-based multi-model framework for simulating subsurface and overland flow hydrological processes on hillslopes. *Journal of Hydrology*, 133842. <https://doi.org/10.1016/j.jhydrol.2025.133842>
5. Wang, Z., Timlin, D., Thapa, R., Fleisher, D., **Beegum, S.**, Han, E., Schomberg, H., Mirsky, S., Sun, W., Reddy, V. and Horton, R., (2025). Process-based vegetative growth model for cereal rye winter cover crop using object-oriented programming and linked-list data structure. *Computers and Electronics in Agriculture*, 231,.109964. <https://doi.org/10.1016/j.compag.2025.109964>
6. Das, S., **Beegum, S.**, Acharya, B. S., & Panday, D. (2025). Soil Carbon Sequestration: A Mechanistic Perspective on Limitations and Future Possibilities. *Sustainability*. <https://doi.org/10.3390/su17136015>
7. Li, L., Hassan, M. A., Wang, D., Wan, G., **Beegum, S.**, Rasheed, A., ... & Xiao, Y. (2025). RGB imaging and computer vision-based approaches for identifying spike number loci for wheat. *Plant Phenomics*, 100051. <https://doi.org/10.1016/j.plaphe.2025.100051>
8. **Beegum, S.**, Reddy, K. R., Ambinakudige, S., & Reddy, V. (2024). Planting for perfection: How to maximize cotton fiber quality with the right planting dates in the face of climate change. *Field Crops Research*, 315, 109483. <https://doi.org/10.1016/j.fcr.2024.109483>
9. **Beegum, S.**, Reddy, K. R., & Reddy, V. (2024). Algorithm for estimating cultivar-specific parameters in crop models for newer crop cultivars. *European Journal of Agronomy*, 160, 127308. <https://doi.org/10.1016/j.eja.2024.127308>
10. **Beegum, S.**, Hassan, M. A., Ramamoorthy, P., Bheemanahalli, R., Reddy, K. N., Reddy, V., & Reddy, K. R. (2024). Hyperspectral Reflectance-Based High Throughput Phenotyping to Assess Water-Use Efficiency in Cotton. *Agriculture*, 14(7), 1054. <https://www.mdpi.com/2077-0472/14/7/1054>
11. Mitra, A., **Beegum, S.**, Fleisher, D., Reddy, V. R., Sun, W., Ray, C., ... & Malakar, A. (2024). Cotton Yield Prediction: A Machine Learning Approach with Field and Synthetic Data. *IEEE Access*. <https://ieeexplore.ieee.org/abstract/document/10568958>
12. Sun, W., Fleisher, D., Timlin, D., Ray, C., Wang, Z., **Beegum, S.**, & Reddy, V. (2024). Simulating climate change effects on soil carbon dynamics in a soybean–maize ecosystem: Using improved CO₂ emission and transport models. *European Journal of Agronomy*, 159, 127226. <https://www.sciencedirect.com/science/article/pii/S1161030124001473>
13. Wang, Z., Timlin, D., Liu, G., Fleisher, D., Sun, W., **Beegum, S.**, ... & Horton, R. (2024). Coupled heat and water transfer in heterogeneous and deformable soils: Numerical model using mixed finite element method. *Journal of Hydrology*, 131068.

14. Jahangeer, J., Yadav, B. K., & **Beegum, S.** (2024). Modeling of Nitrate Transport in the Vadose Zone by Considering the Mobile–Immobile Approach Using a Sand Tank Experiment. *Journal of Hazardous, Toxic, and Radioactive Waste*, 28(1), 04023038.
15. Nandgude, S., **Beegum, S.**, Timlin, D., Ray, C., Sharda, V., Wang, Z., Fleisher, D., Reddy, V., Modeling Maize Crop Growth and Development in Temperate and Tropical Climates using Process-Based Model-MAZSIM (in review)
16. Wang, Z., Timlin, D., Liu, G., Fleisher, D., Sun, W., **Beegum, S.**, Heitman, J., Ren, T., Chen, Y., Reddy, V.R. and Tully, K., (2024). Coupled heat and water transfer in heterogeneous and deformable soils: Numerical model using mixed finite element method. *Journal of Hydrology*, 634, p.131068.
17. **Beegum, S.**, Walne, C. H., Reddy, K. N., Reddy, V. R., Reddy, K. R. (2023). Examining the corn seedling emergence -temperature relationship for recent hybrids: Insights from experimental studies. *Plants*. 12, 3699. <https://doi.org/10.3390/plants12213699>
18. **Beegum, S.**, Reddy, V., & Reddy, K. R. (2023). Development of a cotton fiber quality simulation module and its incorporation into cotton crop growth and development model: GOSSYM. *Computers and Electronics in Agriculture*, 212, 108080. <https://doi.org/10.1016/j.compag.2023.108080>
19. **Beegum, S.**, Sun, W., Timlin, D., Wang, Z., Fleisher, D., Reddy, V. R., & Ray, C. (2023). Incorporation of carbon dioxide production and transport module into a Soil-Plant-Atmosphere continuum model. *Geoderma*, 437, 116586. <https://doi.org/10.1016/j.geoderma.2023.116586>
20. Sun, W., Fleisher, D., Timlin, D., Ray, C., Wang, Z., **Beegum, S.** & Reddy, V. (2023). Does drought stress eliminate the benefit of elevated CO₂ on soybean yield? Using an improved model to link crop and soil water relations. *Agricultural and Forest Meteorology*, 343, 109747. <https://doi.org/10.1016/j.agrformet.2023.109747>
21. **Beegum, S.**, Truong, V., Bheemanahalli, R., Brand, D., Reddy, V., & Reddy, K. R. (2023). Developing functional relationships between waterlogging and cotton growth and physiology-towards waterlogging modeling. *Frontiers in Plant Science*, 14. <https://doi.org/10.3389/fpls.2023.1174682>
22. Sun, W., Fleisher, D., Timlin, D., Ray, C., Wang, Z., **Beegum, S.**, & Reddy, V. (2023). Projected long-term climate trends reveal the critical role of vapor pressure deficit for soybean yields in the US Midwest. *Science of The Total Environment*, 878, 162960. <https://doi.org/10.1016/j.scitotenv.2023.162960>
23. Timlin, D., Fleisher, D., Tokay, M., Paff, K., Sun, W., **Beegum, S.**, Li, S., Wang, Z., & Reddy, V. (2023). CLASSIM: A Relational Database Driven Crop Model Interface. *Smart Agricultural Technology*, 100281, <https://doi.org/10.1016/j.atech.2023.100281>
24. **Beegum, S.**, Timlin, D., Reddy, K. R., Reddy, V., Sun, W., Wang, Z., ... & Ray, C. (2023). Improving the cotton simulation model, GOSSYM, for soil, photosynthesis, and transpiration processes. *Scientific Reports*, 13(1), 7314 <https://doi.org/10.1038/s41598-023-34378-3> .

25. **Beegum, S.**, Malakar, A., Ray, C., & Snow, D. D. (2023). Importance of snowmelt on soil nitrate leaching to groundwater—A model study. *Journal of Contaminant Hydrology*, 255, 104163. <https://doi.org/10.1016/j.jconhyd.2023.104163>
26. Sun, W., Fleisher, D., Timlin, D., Li, S., Wang, Z., **Beegum, S.**, & Reddy, V. (2022). Evaluation of models for simulating soybean growth and climate sensitivity in the US Mississippi Delta. *European Journal of Agronomy*, 140, 126610. <https://doi.org/10.1016/j.eja.2022.126610>
27. Wang, Z., Timlin, D., Fleisher, D., Sun, W., **Beegum, S.**, Li, S., Chen, Y., Reddy, V. R., Tully, K., & Horton, R. (2022). Modeling vapor transfer in soil water and heat simulations: A modularized, partially-coupled approach. *Journal of Hydrology*, 608, 127541. <https://doi.org/10.1016/j.jhydrol.2022.127541>
28. Jahangeer, J., Yadav, B. K., **Beegum, S.**, (2023) Modeling of nitrate transport in the vadose zone by considering the mobile-immobile approach using sand tank experiment, *Journal of Hazardous, Toxic, and Radioactive Waste* (manuscript accepted and in production)
29. Mwabumba, M., Jahangeer, J., **Beegum, S.**, Yadav, B. K., & Rwiza, M. J. (2022). Assessment of Groundwater Quality under Changing Climate in Ngorongoro Conservation Area, Tanzania. *Journal of Irrigation and Drainage Engineering*, 148(10), 04022032. [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001702](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001702)
30. Jeyalakshmi, S., & **Beegum, S.** (2022). Climate change impacts on agriculture-dominated Canadian watersheds. *Sustainability, Agri, Food and Environmental Research*, 10.
31. Jeyalakshmi, S., & **Beegum, S.** (2022). Scenario analysis of fluoride contamination in the groundwater in Kerala. *Sustainability, Agri, Food and Environmental Research*, 10(1).
32. Wang, Z., Thapa, R., Timlin, D., Li, S., Sun, W., **Beegum, S.**, Fleisher, D., Mirsky, S., Cabrera, M., & Sauer, T. (2021). Simulations of Water and Thermal Dynamics for Soil Surfaces With Residue Mulch and Surface Runoff. *Water Resources Research*, 57(11), e2021WR030431. <https://doi.org/10.1029/2021WR030431>
33. **Beegum, S.**, Vanderborght, J., Šimůnek, J., Herbst, M., Sudheer, K. P., & Nambi, I. M. (2020). Investigating atrazine concentrations in the Zwischenscholle aquifer using MODFLOW with the HYDRUS-1D package and MT3DMS. *Water*, 12(4), 1019. <https://doi.org/10.3390/w12041019>
34. **Beegum, S.**, Šimůnek, J., Szymkiewicz, A., Sudheer, K. P., & Nambi, I. M. (2019). Implementation of Solute Transport in the Vadose Zone into the "HYDRUS Package for MODFLOW." *Groundwater*, 57(3), 392–408. <https://doi.org/10.1111/gwat.12815>
35. **Beegum, S.**, Šimůnek, J., Szymkiewicz, A., Sudheer, K. P., & Nambi, I. M. (2018). Updating the Coupling Algorithm between HYDRUS and MODFLOW in the HYDRUS Package for MODFLOW. *Vadose Zone Journal*, 17(1), 1–8. <https://doi.org/10.2136/vzj2018.02.0034>
36. Szymkiewicz, A., Gumuła-Kawęcka, A., Šimůnek, J., Leterme, B., **Beegum, S.**, Jaworska-Szulc, B., Pruszkowska-Caceres, M., Gorczevska-Langner, W., Angulo-Jaramillo, R., & Jacques, D. (2018). Simulations of freshwater lens recharge and salt/freshwater interfaces

using the HYDRUS and SWI2 packages for MODFLOW. *Journal of Hydrology and Hydromechanics*, 66(2), 246–256. <https://doi.org/10.2478/johh-2018-0005>

Book chapters

37. Fleisher, D., Wang, Z., Timlin, D., Sun, W., **Beegum, S.**, Mitra, A., Li, S., & Reddy, V. USDA_ARS ACSL crop models, a book chapter for a Francis Dodd published book (2024, in review)
38. **Beegum, S.**, Alakananda Mitra, Vangimalla Reddy, Dennis Timlin, David Fleisher, Eunjin Han, Zhuangji Wang, Serhan Yesilkoy, Aditya Kapoor, Santhosh Bethi, and Chittaranjan Ray. 2025. *Catalysing Climate Resilience in ASEAN: Innovative Investment Approaches for Agriculture and Natural Resources Management*. Agriculture Planning – CLASSIM
39. **Beegum, S.**, & Das, S. (2022). 17—Nanosensors in agriculture. In S. Ghosh, S. Thongmee, & A. Kumar, (Eds.), *Agricultural Nanobiotechnology* (pp. 465–478). Woodhead Publishing. <https://doi.org/10.1016/B978-0-323-91908-1.00012-2>
40. Das, S., & **Beegum, S.** (2022). 13—Nanofertilizers for sustainable agriculture. In S. Ghosh, S. Thongmee, & A. Kumar (Eds.), *Agricultural Nanobiotechnology* (pp. 355–370). Woodhead Publishing. <https://doi.org/10.1016/B978-0-323-91908-1.00005-5>
41. Sudheer, K. P., Thomas, J., Jainet, P.J., Nizar, S., **Beegum, S.**, Emil, D., Jesna., Pai, D. S. (2022) From science to policy- towards an approach linking extreme rainfall events to climate resilience and policy development, accepted for publication in the Elsevier book series: *Modeling and Mitigation Measures for Managing Extreme Hydrometeorological Events Under a Warming Climate* <https://doi.org/10.1016/B978-0-443-18640-0.00015-8>

Presentations at conferences

1. **Beegum, S.**, Reddy K.R., Reddy V.R., Ambinakudige S., Timlin, D., Fleisher, D., Yeşilköy, S. (2024). Planting for perfection: How to maximize cotton fiber quality with the right planting dates in the face of climate change. AGU Meeting, Dec. 9 to 13, Washington, DC
2. **Beegum, S.**, Nandgude S., Timlin, D., Ray, C., Sharda V., Wang, Z., Fleisher, D., Reddy, V. R. (2024). Modeling maize crop growth and development in temperate and tropical climates using process-based model - MAZSIM: A comparative analysis with emphasis on drought and excess precipitation, AGU Meeting, Dec. 9 to 13, Washington, DC
3. Fleisher, D., Yeşilköy, S., **Beegum, S.**, Wang, Z., Timlin, D. (2024). Simulating Climate Adaptation and Water Saving Potential with Alternate Wetting and Drying Cycles for U.S. Rice Production. AGU Meeting, Dec. 9 to 13, Washington, DC
4. Timlin, D., **Beegum, S.**, Kathimbo A., Wang, Z., Rudnick D., Proctor C., Nakbuye H.N., Fleisher, D., Ray, C., Malakar A., Reddy, V. R. (2024). The Use of a Crop Simulation Model to Explore Water and Nitrogen Use Scenarios to Minimize Nitrogen Transport in Irrigated Maize in Nebraska. AGU Meeting, Dec. 9 to 13, Washington, DC
5. Rahman A T M, Šimůnek J., Bradford S.A., Ajami H, Meles M. B., Chen L., Adam Szymkiewicz A., Pawłowicz M., Casillas A., and **Beegum S.** (2024). An Innovative Multi-Model Coupling Strategy for Simulating Watershed-Scale Surface and Subsurface Flow

Interactions. AGU Meeting, Dec. 9 to 13, Washington, DC

6. **Beegum, S.**, Timlin, D., Kathimbo A., Wang, Z., Rudnick D., Proctor C., Nakbuye H.N., Fleisher, D., Ray, C., Malakar A., Reddy, V. R. (2024), Process-Based Crop Models Have a Useful Role in Agricultural Field Trials, CANVAS, Nov. 10 to 13, San Antonio, Texas
7. **Beegum, S.**, Reddy K.R., Reddy V.R., Ambinakudige S., (2024), Planting for Perfection: How to Maximize Cotton Quality with the Right Planting Dates in the Face of Climate Change, CANVAS, Nov. 10 to 13, San Antonio, Texas
8. Fleisher, D., Yeşilköy S., Timlin D., **Beegum S.**, Mitra A, Wang Z., Malakar A., Bethi S.K., Han E., Reddy V.R., Ndayishimiye E., Ray C., Dushimeyesu J., and Ukwishaka Y., (2024) Integrating on-farm Crop Production Data with In-Season Risk Management Decision Support Software, AGU Meeting, Nov. 9 to 13, Washington, DC
9. **Beegum, S.**, Sun, W., Timlin, D., Wang, Z., Fleisher, D., Reddy, V. R., & Ray, C. (2023). Incorporation of Carbon Dioxide Production and Transport Module into a Soil-Plant Atmospheric Continuum Model. ASA, CSSA, SSSA International Annual Meeting, Oct 29 to Nov 1, St. Louis, MO
10. Timlin, D., **Beegum, S.**, Sun, W., Wang, Z., Fleisher, D. H., Reddy, V., & Ray, C. (2023) Simulation of Carbon Dioxide Production and Transport Module with a Soil-Plant-Atmosphere Continuum Model [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/152260>
11. Nandgude, S., Shelar, R., Ray, C., **Beegum, S.**, & Malakar, A. (2023) Influence of Conservation Measures on Soil and Carbon Sequestration in Watershed [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/151327>
12. Wang, Z., Timlin, D., Thapa, R., Fleisher, D. H., Sun, W., **Beegum, S.**, Lu, Y., Mirsky, S. B., Reberg-Horton, C., Zhang, X., Reddy, V., Horton, R., Tully, K., & Tully, K. (2023) Modeling the Dynamics of the Cover Crop Growth and Residue Decomposition in a Cereal Rye-Residue Mulch Management Strategy during Winter Fallow Periods. [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/152278>
13. **Beegum, S.**, Timlin, D., Reddy, K. R., Reddy, V., Fleisher, D. H., & Ray, C. (2023) Advancing the Gossym Model for Improved Simulation of Soil, Photosynthesis, and Transpiration Processes in Cotton [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. <https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/148876>
14. Brand, D., **Beegum, S.**, Truong, V., Bheemanahalli, R., Reddy, V., & Reddy, K. R. (2023) Establishing Functional Relationships between Waterlogging and Cotton Growth and Physiology: Advancing Waterlogging Modeling [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/150909>
15. **Beegum, S.**, Reddy, V. R., & Reddy, K. R. (2023) Estimating Cultivar-Specific Parameters in

Crop Models for Newer Crop Cultivars [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/155430>

16. **Beegum, S.**, Reddy, K. R., & Reddy, V. (2023) Improving Cotton Crop Management through a Novel Fiber Quality Module Integrated into Cotton Simulation Model, Gossym. [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/148874>
17. Sun, W., Fleisher, D. H., Timlin, D., Ray, C., **Beegum, S.**, Wang, Z., & Reddy, V. (2023) Simulating Climate Change Effects on Soil Carbon Dynamics in a Soybean–Maize Ecosystem: Using Improved CO₂ Emission and Transport Models [Abstract]. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO.
<https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/151634>
18. **Beegum, S.**, Timlin, D., Ray, C., Reddy, V. R. (2023). Model Development for Simulating Soil Carbon Dioxide Production, Transport, and Soil Respiration in Agricultural Regions, AGU Meeting, Dec. 9 to 15, San Francisco, CA
19. Nandgude S., Shelar R., Mane S., **Beegum, S.**, Ray, C., (2023). Harnessing Soil and Water Conservation for Carbon Sequestration: Insights from a Rainfed Watershed in India, AGU Meeting, Dec. 9 to 15, San Francisco, CA
20. Mitra A., **Beegum S.**, Fleisher D., Reddy VR, Sun W., Ray C., Timlin D., and Malakar A., (2023) A Novel Machine Learning Approach for Cotton Yield Prediction. AGU Meeting, Dec. 9 to 15, San Francisco, CA
21. **Beegum, S.**, Ray, C., Timlin, D., Reddy, V. R., (2023) Model Development for Simulating Soil Carbon Dioxide Production, Transport, and Soil Respiration in Agricultural Regions. AGU Meeting, Dec. 9 to 15, San Francisco, CA
22. **Beegum, S.**, Timlin, D., Fleisher, D. H., & Reddy, V. (2021). Integration of a Farquhar Photosynthesis Model, a Leaf Level Energy Balance Model, and 2DSOIL, a Finite Element Model for Soil Processes, into the Cotton Simulation Model Gossym. ASA, CSSA, SSSA International Annual Meeting, Nov. 7 to 10, Salt Lake City, Utah
23. Sun, W., Fleisher, D. H., Timlin, D., Li, S., Wang, Z., **Beegum, S.**, Reddy, V. R., & Ray, C. (2021). Inter-Comparison of Different Crop Models for Simulating Soybean Growth and Yield in the US Mississippi Delta. ASA, CSSA, SSSA International Annual Meeting, Nov. 7 to 10, Salt Lake City, Utah
24. **Beegum, S.**, Vanderborght, J., Herbst, M., & Šimůnek, J. (2019). Simulation of the long-term evolution of pesticide concentrations in the Zwischenscholle aquifer using the coupled soil-groundwater model MODFLOW-HYDRUS-MT3DMS, XVI Symposium on Pesticide Chemistry. Advances in Risk Assessment and Management", Sept. 3, Piacenza, Italy.
25. **Beegum, S.**, Sudheer K. P, Nambi, I. M., & Berlin M. (2018). Investigating Strategies for Safe Reuse of Treated Textile Wastewater for Irrigation: A Comprehensive Study. Global Water Security Conference for Agriculture and Natural Resources, ASABE Global Initiative Conference, Indian Society of Agricultural Engineers (ISAE), October 3-6, Hyderabad, India.

26. **Beegum, S.,** Sudheer K. P., & Nambi, I. M. (2018). Implementation of Solute Transport in the Vadose Zone into the 'HYDRUS Package for MODFLOW.' International Soil and Water Assessment Tool Conference, January 10-12, Chennai, India.
27. Šimůnek, J., **Beegum, S.,** Sudheer, K. P., Szymkiewicz, A., & Nambi, I. M. (2017). Implementation of Solute Transport in the Vadose Zone into the 'HYDRUS Package for MODFLOW' 2017 AGU Fall Meeting, Dec. 13, New Orleans, USA.
28. **Beegum, S.,** Sudheer, K. P., Šimůnek, J., Szymkiewicz, A., & Nambi, I. M. (2017). Integration of Solute Transport and Water Flow Model for Unsaturated and Saturated Soil Zone. Proceedings of the Annual International Meeting of ASABE, July 16-19, Spokane, Washington, USA.
29. **Beegum, S.,** Sudheer, K.P, Nambi, I. M., Šimůnek, J., & Szymkiewicz, A. (2017). Integration of Solute Transport and Water Flow Models for Unsaturated and Saturated Soil Zones using the HYDRUS Package for MODFLOW and MT3DMS. Proceedings of the MODFLOW and More 2017 Conference, May 21 - 24, Integrated Groundwater Modelling Centre, Colorado School of Mines, Colorado, USA.
30. **Beegum, S.,** & Suja, R. (2014). Urban stormwater flood mitigation-A requirement in India. American Geophysical Union's (AGU), Science Policy Conference, Jun. 16-Jun. 18, Washington, DC, USA.

Invited talks

1. **Sahila Beegum.** 2018. Integrated water flow and solute transport modeling in unsaturated and saturated soil zones, Faculty and Staff, and students, Gdansk University of Technology, Gdansk, Poland.
2. **Sahila Beegum.** 2018. Updates in HYDRUS package for MODFLOW, Faculty and Staffs, The Katholieke Universiteit Leuven, Belgium.
3. **Sahila Beegum.** 2018. Water smart cities-challenges and opportunities in Kerala. International conference by Translational Research and Professional Leadership Centre, TPLC, in association with IIT Madras, India.
4. **Sahila Beegum** 2024. Advancing Sustainable Agriculture through Process-Based Crop Modeling in the Era of Climate Change, ICAR-National Rice Research Institute, Odisha, India
5. **Sahila Beegum** 2024. Advancing Sustainable Agriculture through Process-Based Crop Modeling in the Era of Climate Change, 6th International Conference on Agriculture for Sustainable Development, ICAR-National Rice Research Institute, Odisha, India
6. **Sahila Beegum** 2024, Measuring and Modeling of Evapotranspiration, invited lecture to Master's and PhD students at Mississippi State University for the Agricultural Climatology Course

7. **Sahila Beegum** 2024, Evapotranspiration: concepts, applications, and modeling in relation to agricultural Irrigation water requirements. Asian Institute of Technology, Thailand.