

GRADUATE AG RESEARCH SPOTLIGHT



Sushant Mehan

"My plan is to give back to my country. I want to develop a program where I can apply my research to worsening global water issues."

Sushant Mehan, PhD candidate, Agricultural and Biological Engineering

THE STUDENT: Sushant Mehan grew up amid both agriculture and industry. He comes from the Punjab state in northern India, one of the top international producers of wheat and rice. His hometown, Ludhiana, is a large industrial city and home to Punjab Agricultural University, which he chose for undergraduate study. Mehan's BS in agricultural engineering reflects his interest in the impact of environmental issues on the quality of human life. His senior-year project focused on improving the shelf life of minimally processed food. After graduating, he worked for John Deere in Pune, Maharashtra, India, and "grew concerned that industry might limit my passion for in-depth research on diverse range of interdisciplinary topics," he says. He returned to PAU for a master's degree that focused on soil and water engineering: "Water has become a critical component in my city and around the world," he notes. He came to Purdue in October 2015 for an international conference on the SWAT (Soil and Water Assessment Tool) computer model. There he met Margaret Gitau, associate professor of agricultural and biological engineering, who encouraged Mehan to apply for doctoral study in ABE. He returned to Purdue in January 2016 and will graduate this summer. He is the outgoing president of the ABE Graduate Student Association and was recently named the 2017-18 ABE Outstanding PhD Student for his educational excellence, research, and service to the department, school and national societies.

THE RESEARCH: With Gitau's guidance in the Water Resources and Ecohydrologic Engineering Group, Mehan uses hydrologic modeling to assess the impact of climate change on water resources in the Western Lake Erie Basin. As extreme precipitation forces water over land and into

main streams, the movement of water disturbs not just the fields' nutrient balance but also the ecosystem's water quality, he explains. He studies both current and future impact to enable farmers and policy makers to implement effective management practices. The work is interdisciplinary, he emphasizes, starting with the core science behind how water moves and involving climatology, hydrology, GIS and remote sensing, computer programming, simulations and statistics.

TAKING KNOWLEDGE HOME: India has quality issues not just with its surface water but with the sub-surface water (groundwater) as well. Water quality is regulated, but to standards different than in the U.S. After three years in Indiana, drinking the water in his home country now makes Mehan think that the water quality in India has deteriorated and needs immediate action plans for remediation. Cleaning India's water system with equitable and sufficient water distribution for irrigating crops is a difficult challenge, but he is committed to gaining the knowledge he needs to contribute to interdisciplinary solutions.

PERFECT FIT: "My agricultural and biological engineering research shares the benefits of two colleges at Purdue," Mehan says. "The professors I'm working with are the eminent scientists in the field. Their feedback has been critical." A Bilsland Dissertation Fellowship allowed Mehan to focus on research and writing, which included co-authoring three publications in his final year. His next step may likely be a postdoc; he has applied to universities in the U.S., Australia, India, and Europe. In his spare time, he enjoys writing essays, poetry and blogs, listening to music, and cooking for friends.