

## From the Director's Desk ...

The Mississippi Water Resources Research Institute is opening for business as is Mississippi State University. While plans for the 2020 Mississippi Water Resources Conference necessitated cancellation due to COVID-19, we will schedule something in 2021.

MWRRI has increased in size. Two employees have been hired to continue research to address water issues in Mississippi. Dr. Madhav Dhakal, a PostDoctoral Researcher formerly working with USDA/ARS at the National Sedimentation Lab was hired and is continuing research at the Delta Research and Extension Center in Stoneville, Mississippi.



Also, Dr. Jason Barrett transferred to MWRRI effective May 1 from the MSU Extension Service Center for Government and Community Development. Dr. Barrett has been with MSU for quite a while and specializes in drinking water and training professionals. More information about Dr. Dhakal and Dr. Barrett are included with this issue.

We hope everyone will continue to support MWRC and plan to attend the 2021 annual water resources conference. As more information becomes available, distribution will be through newsletters, listserv, and website [www.wrri.msstate.edu](http://www.wrri.msstate.edu). Through each of these mediums, you will also receive updates on funding opportunities, job openings for full time as well as students, and legislation. Previous newsletter issues are available for review on the institute's website, [www.wrri.msstate.edu](http://www.wrri.msstate.edu).

*Jason*

Jason Krutz, Ph.D.

**PostDoc Research Associate  
Dr. Madhav Dhakal  
Delta Research and Extension Center  
Mississippi State University, Stoneville, MS**



**Tell us a little bit about your background and your current position.**

I am currently a Postdoctoral Research Associate at Mississippi Water Resources Research Institute, MSU.

My responsibility is to conduct a long-term agroecosystem research project of USDA-ARS, Stoneville, MS. I started in June 2019 after graduating from Texas Tech University with a Ph.D. in Plant and Soil Science. My dissertation was titled “Improvement of perennial warm-season native grassland with alfalfa,” which focused on the trade-off between forage quality improvement and soil water depletion as affected by alfalfa row spacings and cultivars. I did a master’s degree in Agronomy (weed science) and a B.S. in Agricultural Science from Tribhuvan University, Nepal in 2011 and 2009, respectively. My master’s research was on rice weed management methods.

**What are your current research areas?**

My current research focuses on water dynamics and water use efficiency measurement in a field setting under row-crop agriculture in the Mississippi Delta Alluvial Plains. I am using soil moisture sensors to monitor soil water content, suction cup lysimeters to collect and analyze the water quality and nutrient leaching, unmanned aerial vehicle (UAV) to analyze ground cover and stress physiology, and litterbags to study decomposition and N release from the cover crop residue. We are comparing ‘business-as-usual’ (conventional till and no-cover crop) and state-of-the art ‘aspirational’ (no-till cover cropping) methods in cotton and sorghum cropping systems. My plan is to engage in basic + applied research on agronomic production system, water conservation, water quality, soil health, precision agriculture, and climate change.

**Awards and accomplishments, if any.**

I was recently honored by George Tereshkovich *Outstanding Ph.D. Graduate Award 2019/2020* by the Department of Plant and Soil Science, Texas Tech University.



Drilling holes to install capacitance moisture sensors down to 48 inch at LTAR site, Stoneville, MS



Collecting data during cotton and sorghum growing season in summer 2019 at LTAR site



Cotton before spraying defoliant in late September and assessment of ball opening and maturity

**Assistant Extension Professor  
Dr. Jason Barrett  
Mississippi State University**

**Tell us a little bit about your background and your current position.**

I am excited to be joining the Mississippi Water Resources Institute (MWRRI) at Mississippi State University (MSU). I am originally from Bobo, MS which is just south of Clarksdale, MS in Coahoma County. I currently reside in Starkville, MS with my wife Shannon and four kids; Joe, Bronwynne, Betsy Gray, and Hudson. After graduating from Lee Academy in 1997, I attended MSU for a Bachelor of Science degree in Agricultural Economics and a Master of Agribusiness Management. I worked in the private sector for a few years before returning to MSU in 2007 as an Extension Associate in the Agricultural Economics department. I began immediately working my PhD in Public Policy and Administration and finished in December 2014.



For the past thirteen years, I have worked closely with state regulatory agencies, Extension professionals, and local government officials to manage and coordinate technical assistance programs and Extension programs for Mississippi public water systems, board members, certified water and wastewater operators, and private well owners. While I was an Extension Associate with the Agricultural Economics department, the public water system assistance programs consisted of the Peer Review program and the Board Management Training program. I developed an additional program funded through the Mississippi State Department of Health to reimburse Mississippi certified water operators for expenses incurred to continue their certification.

**What are your current research areas?**

In November 2012, I transitioned to the Extension Center for Government and Community Development. In this role, I worked closely with Mississippi municipalities to address financial issues associated with their water, wastewater, and sanitation enterprise funds. I have been able to assist municipalities with making rate adjustments by informing them of the magnitude of customers that will be affected as well as the quantity of revenue that will be generated by the rate adjustment. This assistance has allowed numerous municipalities to maintain their water, wastewater, and sanitation enterprise funds in a positive cash flow position. I have also

worked with state agencies to perform management audits for public water and wastewater systems. The management audit is executed to give a professional objective review of a drinking water and/or wastewater system's operations; physical and financial. In 2013, I created and have since directed the Mississippi Well Owner Network program to educate and inform private well owners. The program benefits private well owners who want to become familiar with groundwater resources and their private well. The Mississippi Well Owner Network program is a statewide program with regional and national partners. In the fall of 2019, we began the WIIN Grant - Lead in Drinking Water in Schools and Child Care Program which is a national effort because lead in drinking water, drinking water quality and infrastructure have become a household conversation of concern.

### **How does MWRRI fit into your future plans? How can we help you be successful?**

My short run goals are to incorporate the current drinking water projects into MWRRI. I would like to see us add graduate students and/or faculty/staff to projects in order to expand as well as publicize the impact of each project. Many of the current drinking water projects can be stand alone and self-supporting with the proper maintenance and adequate staffing. My long-run goals are to continue to meet the timely drinking water needs of Mississippi through our programs and staffing, add programs and/or projects that address the needs or concerns of stakeholders, and educate and train the water professionals and scientist of the future.



## Funded Research Projects

Research proposals awarded for USGS 104b funding beginning March 1, 2020 include:

- Innovative Nutrient Recovery Schemes for Sustainable Agricultural Systems – Dr. Veera Ganeswar Gude and Dr. Benjamin Magbanua from Mississippi State University. (two years) – *Develop microbial electrochemical systems that enable resources recovery and integrated water management for sustainable and resource-efficient agricultural systems.*
- Irrigation Systems, Row Spacing, and Applied Fertilizer Effects on Water Use and Crop Productivity – Dr. Gurbir Singh, Dr. H.C. Pringle, Dr. Drew Gholson, Dr. Gurpreet Kaur, Dr. Nicolas Quintana, and Dr. Saseendran Anapalli from Mississippi State University, National Center for Alluvial Aquifer Research and Delta Research and Extension Center, and USDA-ARS. (three years) – *Optimizing the irrigation water application efficiency, row spacing, and soil fertility will help in identifying irrigation systems that would work best for Mississippi Delta farmers producing corn or soybean.*
- Multi-Scale Evaluation of the Impact of Hydrological Extremes on Coastal Wetland Vegetation – Dr. Wei Wu from University of Southern Mississippi. (two years) – *Evaluate the impact of hydrological extremes on salt marsh vegetation productivity; focus on vegetation biomass as the primary metric to assess the impact.*

The USGS 104g RFP has been released. Researchers submitted their full proposals to MWRRI for a submission date of March 19. A special RFP added to the submission pool was announced in April with a submission date of June 11. There were two submissions and one special interest submitted for review and consideration.

## Upcoming Events

- USGS 104b RFP for 2021-2022 funding is expected November 2020. Stay tuned for details.
- The 2021 Mississippi Water Resources Conference will be held sometime in 2021 spring. More details can be found at [www.wrri.msstate.edu](http://www.wrri.msstate.edu).

Do you have a publication that you would like to share? Consider distribution through the MWRRI newsletter. Contact Jessie Schmidt for information.

Do you have an upcoming event that all those interested in water-related issues and agriculture would find interesting? Considering adding it to the newsletter and/or listserv. Also available is the MWRRI Twitter account - @MS\_WRRI.

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## About the Mississippi Water Resources Research Institute (MWRRI)

The institute exists as both a federal and a state research unit. Established in 1964, the MWRRI is one of 54 institutes (one in each state, The District of Columbia, Guam, Puerto Rico, and the Virgin Islands) that form a national network to solve water problems of state, regional, or national significance. In 1983, the Mississippi legislature formally designated the MWRRI as a state research institute. Federal funds designated for the institute are used to consult with state water officials to develop coordinated research, technology transfer and training programs that apply academic expertise to water and related land-use problems. These various activities are funded through an annual grant from the United States Geological Survey (USGS). Mississippi state appropriations provide additional funds for cost share. The institute also assists state agencies in the development of a state water management plan, maintaining a technology transfer program, and serves as a liaison between Mississippi and federal funding agencies.

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