**WERA1022 SAES-422**

**Basic Information**

* Project No. and Title: WERA1022: Irrigation Technologies and Scheduling for Water Conservation and Water Resources Management
* Period Covered: 10/01/2023 to 09/30/2024
* Date of Report: 3/29/2025
* Annual Meeting Dates: 8/14/2024-8/15/2024

**Publications**

Arizona

* Conference publications:
	+ Attalah, S., E. A. Elsadek, P. Waller, D. Hunsaker, K. R. Thorp, E. Bautista, C. Williams, G. Wall, E. Orr, D. Elshikha. 2024. Evaluating the Performance of OpenET Models for Alfalfa in Arizona. Presented at the ASABE meeting in Los Angeles, California, USA. Paper number 2400041.
	+ Elshikha, D., S. Attalah, E. A. Elsadek, P. Waller, K. R. Thorp, D. Sanyal, E. Bautista, R. Norton, D. Hunsaker, C. Williams, G. Wall, E. Barnes, E. Orr. 2024. The Impact of Gravity Drip and Flood Irrigation on Development, Water Productivity, and Fiber Yield of Cotton in Semi-Arid Conditions of Arizona. Presented at the ASABE meeting in Los Angeles, California, USA. Paper number 2400004.
* Extension publications:
	+ Elshikha, D. M., Attalah, S., Waller, P., Hunsaker, D. J., Thorp, K. R., Bautista, E., Williams, C., Wall, G., Orr, E., & Elsadek, E. A. (2024). Can OpenET Transform Irrigation Management in the Southwestern U.S. The University of Arizona Cooperative Extension, accepted in December 2024.
	+ Elshikha, D. M., Attalah, S., Waller, P., Norton, R., Williams, C., Thorp, K. R., Wall, G., Orr, E., & Elsadek, E. A. (2024). Understanding Distribution Uniformity in Gravity Drip Irrigation Systems. The University of Arizona Cooperative Extension, accepted in December 2024.
	+ Elshikha, D. M., Attalah, S., Waller, P., Levinson, R., Bloomfield, M., Koralewski, S., Teeter, M., Moller, P., Orr, E., & Elsadek, E. A. (2024). Smart Irrigation Solutions for Today’s Farms. The University of Arizona Cooperative Extension, accepted in December 2024.
	+ Sanyal, D., Stackpole, C., Arp, T., & Elshikha, D. E. (2024). Impacts of Deficit Irrigation on Barley and Durum Wheat Production in Arizona: A Preliminary Report. The University of Arizona Cooperative Extension, az2083. <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az2083-2024.pdf>
	+ Elshikha, D. E., Katterman, M., Attalah, S., Waller, P., Thorp, K., Alshraah, S., Sanyal, D., Norton, R., & Orr, E. (2024). Guidance for Soil Moisture Sensor Selection: Market Analysis and Decision-Making Strategies. The University of Arizona Cooperative Extension publication, az2082. <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az2082-2024.pdf>
	+ Elshikha, D. E., Attalah, S., Waller, P., Katterman, M., Masson, R., Norton, R., Wang, G., & Orr, E. (2024). Managing ratooned guayule in the Southwestern United States. The University of Arizona Cooperative Extension publication, az2058. <https://repository.arizona.edu/bitstream/handle/10150/671153/az2058-2023.pdf?sequence=1&isAllowed=y>

California

* UCR, Verdi Water Management Group
	+ Iradukunda, J.C\*., Verdi, A. (2024). Evaluating the Tradeoffs Between Water Conservation, Aesthetic Value, Evaporative Cooling and CO2 Emissions in St. Augustinegrass and Buffalograss. *Agricultural Water Management,* 305 (2024) 109117.
	+ Azad, A., Farooq, H., Verdi, A.\*, Liu, H.\* (2024). Integration of Persulfate Photolysis and Deficit Irrigation in Agriculture: Improving Edible Crop Quality via Recycled Wastewater Irrigation. *Journal of Hazardous Materials Letters*. 5(2024) 100115.
	+ Singh, A., Verdi, A\*. (2024). Estimating the Soil Water Retention Curve by the HYPROP-WP4C System, HYPROP-based PCNN-PTF and Inverse Modeling Using HYDRUS-1D. *Journal of Hydrology*. 639 (2024) 131657.
	+ Azad, A., Iradukunda, J.C., Men, Y., Verdi, A\*., Liu, H.\* (2024). Persulfate Photolysis and Limited Irrigation of Recycled Wastewater for Turfgrass Growth: Accumulation of Pharmaceutical and Personal Care Products and Physiological Responses. *Water Research*, 262 (2024) 122009.
	+ Singh, A., Verdi, A\*., Haver, D., Sapkota, A., Iradukunda, J.C. (2024). Using A Soil Moisture Sensor-Based Smart Controller for Autonomous Irrigation Management of Hybrid Bermudagrass with Recycled Water in Coastal Southern California. *Agricultural Water Management*. 299(2024) 108906.
	+ Verdi, A\*., Naseri, M., (2024). Effects of tire wear particles on the water retention of soils with different textures in the full moisture range. *Journal of Contaminant Hydrology*. 264 (2024) 104345.
	+ Verdi, A\*., Singh, A., Sapkota, A., Ghodsi, S. (2024). Assessing The Impact of Water conservation on Cooling Potential of two Turfgrass Species. *Journal of the ASABE*. 67(3): 749-759.
	+ Haghverdi, A\*., Sapkota, A., Singh, A., Ghodsi, S., Reiter, M. (2023). Developing Turfgrass Water Response Function and Assessing Visual Quality, Soil Moisture and NDVI Dynamics of Tall fescue Under Varying Irrigation Scenarios in Inland Southern California. *Journal of the ASABE*. 1497-1512.

Louisiana

* Peer-reviewed publications
	+ Venishetty, V., Lo, T.H., Conger, S. L. D., Rix, J., Yanes Buezo, R.F., and Gholson, D.M. (2024). Further characterizing the within-field variability of Watermark soil water sensor data over multiple site-years. App. Eng. Agric. 41(1), 23-36. <https://doi.org/10.13031/aea.15924>
	+ Conger, S. L. D., R. Rohli, C. Friedland, and M. Franks. 2024. Drought Irrigation Response Tool (DIRT). LA-Division ASSCT Annual Meeting Abstracts, J. Am. Soc. Sugarcane Tech., 44: 9-15.
* Extension publications
	+ Hayes, Gregory V, DeBoer, Eric, Conger, Stacia. "Louisiana Salinity Field Reference for Agriculture". 2024, Publication No. P3969
	+ Franks, Meggan; Stacia L. Davis Conger, Carol Friedland, Robert Rohli, April Divine, Andrew Garcia, Shifat Mithila, and Md Adilur Rahim. "A Community Engagement Approach to Managing Drought: The Drought Irrigation Response Tool (DIRT)." Louisiana Agriculture Vol. 67, No. 2, Spring 2024. pp. 20-23.

USDA-ARS Texas

* Andrade, M.A., S.A. O'Shaughnessy, and S.R. Evett (2023). Forecasting of canopy temperatures using machine learning algorithms. Journal of the ASABE. 66(2):297-305.<https://doi.org/10.13031/ja.15213>
* Andrade, M.A., Oshaughnessy, S.A., Evett, S.R., Kisekka, I. (2023). A sensor-based decision support system for variable rate irrigation systems. Irrigation Today. 8(2):30-32.<https://irrigationtoday.org/features/a-sensor-based-decision-support-system-for-variable-rate-irrigation-systems/>.
* Bhatti, S., D. M. Heeren, S. A. O’Shaughnessy, C. M. U. Neale. J. LaRue, S. Melvin, E. Wilkening, and G. Bai. (2023) Toward automated irrigation management with integrated crop water stress index & spatial soil water balance. Precision Agriculture. https://doi.org/10.1007/s11119-023-10038-4
* Colaizzi, P. D., O’Shaughnessy, S. A., Evett, S. R., Marek, G. W., Brauer, D., Copeland, K. S., & Ruthardt, B. B. (2023). Data quality control for infrared thermometers viewing crops. Appl. Eng. Agric. 39(4): 427-438.<https://doi.org/10.13031/aea.15642>.
* Evett, Steven R.; Copeland, Karen S.; Ruthardt, Brice B.; Marek, Gary W.; Colaizzi, Paul D.; Howell, Terry A., Sr.; Brauer, David K. (2022). Standard quality controlled research weather data - USDA-ARS, Bushland, Texas. USDA ARS NAL Ag Data Commons.<https://doi.org/10.15482/USDA.ADC/1526433>
* Kimball, Bruce A., Kelly R. Thorp, Kenneth J. Boote, Claudio Stockle, Andrew E. Suyker, Steven R. Evett, et al. (2023). Simulation of evapotranspiration and yield of maize: An Inter-comparison among 41 maize models, Agricultural and Forest Meteorology, Volume 333, 2023, 109396, ISSN 0168-1923,<https://doi.org/10.1016/j.agrformet.2023.109396>.
* Kiraga, S.; Peters, R.T.; Molaei, B.; Evett, S.R.; Marek, G. (2023). Reference Evapotranspiration Estimation Using Genetic Algorithm-Optimized Machine Learning Models and Standardized Penman–Monteith Equation in a Highly Advective Environment. Water 2024, 16, 12.<https://doi.org/10.3390/w16010012>
* Marek, G.W., Evett, S.R., Marek, T.H., Porter, D.O., Schwartz, R.C. 2023. Field evaluation of conventional and downhole TDR soil water sensors for irrigation scheduling in a clay loam soil. Applied Engineering in Agriculture. 39(5):495-507.<https://doi.org/10.13031/aea.15574>
* O'Shaughnessy, S.A., Colaizzi, P.D. (2023a). Improving water productivity in cotton using mobile drip irrigation technology. Proceedings of the U.S. Committee on Irrigation and Drainage Conference, October 17-20, 2023, Ft. Collins, Colorado.
* O'Shaughnessy, S.A., Colaizzi, P.D., Bednarz, C.W. (2023b). Sensor feedback system enables automated deficit irrigation scheduling for cotton. Frontiers in Plant Science. 14:1-14.<https://doi.org/10.3389/fpls.2023.1149424>.
* Schwartz, R. C., Witt, T. W., Ulloa, M., Colaizzi, P. D., & Baumhardt, R. L. (2024). Irrigation response, water use, and lint yield of upland cotton cultivars. Journal of the ASABE. 67(2):421-437.<https://doi.org/10.13031/ja.15868>
* Soto, A. L., Shrestha, R.,Xue, Q., Colaizzi, P., O’Shaughnessy, S., Workneh, F., Adhikari, R., & Rush, C. (2024). Evaluation of three irrigation application systems for watermelon production in the Texas High Plains. Agronomy Journal, 1–16.<https://doi.org/10.1002/agj2.21653>
* Volk, J., Huntington, J., Melton, F., Allen, R., Anderson, M., Fisher, J., Kilic, A., Senay, G., Halverson, G., Knipper, K., Minor, B., Pearson, C., Wang, T., Yang, Y., Evett, S., French, A., Jasoni, R., Kustas, W. (2023a). Development of a Benchmark Eddy Flux Evapotranspiration Dataset for Evaluation of Satellite-Driven Evapotranspiration Models Over the CONUS. Agric. Forest Meteor. 331, 2023, 109307,<https://doi.org/10.1016/j.agrformet.2023.109307>
* Volk, J.M., Huntington, J.L., Melton, F., Minor, B., Wang, T., Anapalli, S., Anderson, R.G., Evett, S. French, A., Jasoni, R., Bambach, N., Kustas, W.P.,g Alfieri, J., Prueger, J., Hipps, L., McKee, L., Castro, S.J., Alsina, M.M., McElrone, A.J., Reba, M., Runkle, B., Saber, M., Sanchez, C., Tajfar, E., Allen, R., & Anderson, M. (2023b). Post-processed data and graphical tools for a CONUS-wide eddy flux evapotranspiration dataset. Data in Brief 48 (2023) 109274,<https://doi.org/10.1016/j.dib.2023.109274>