

BER-RENEW iSAVe: New Energy Sciences Workforce to Advance Innovations in Sustainable Arid Vegetation

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The southwestern United States is challenged by climate change, reduced water supply, and air pollution. As one of the strongest academic institutions in the region, San Diego State University (SDSU) has a collective mission to devise and implement solutions for local and global problems, supporting both the educational and economic development of historically excluded communities (HEC). This project will provide meaningful, equity-centered mentoring to HEC graduate students as they engage in cutting-edge research focused on developing novel climate-smart solutions for agriculture (with a focus on sorghum) in marginal soils with partnerships at Lawrence Berkeley National Laboratory and Pacific Northwest National Laboratory.

The overarching goal of the research is to provide transformative solutions for current agricultural practices by delivering fundamental knowledge of plant growth–promoting microbiome interactions, thus providing incentives for sustainable production while decreasing water usage and greenhouse gas emissions. HEC graduate students will play critical roles with meaningful participation in all of these culturally and socially relevant project areas. This integrative study represents a unique platform for interdisciplinary preparation in key areas of science, technology, engineering, and math that will increasingly be called upon to solve many of humanity’s environmental challenges. The research is designed to equip HEC graduate students with advanced experimental, computational, and mathematical skills and provide a modern-day biotechnology perspective that requires the integration of scientific discoveries with long-term social, economic, and sustainability considerations. These efforts will create a robust pipeline for diversifying the biotech workforce of the future by developing interest in biotechnology and training SDSU students for rewarding careers in the rapidly emerging field of bio-based innovations. The research aims to fund the training of four graduate students.