

# Rooting for Success across the Bioenergy Research Centers

## Background

- Scientists within the Bioenergy Research Centers (BRCs) acknowledge plants roots are important for productivity and decarbonization.
- Roots and other belowground factors are difficult to study, with few concerted efforts to address the challenges.

## Approach

- Researchers from across the four BRCs organized a virtual workshop on root and microbiome measurements on March 5, 2021, attended by 102 participants.
- Keynote speakers offered perspectives while group discussions identified key difficulties, challenges and priorities for BRC activities.

## Outcome

- The workshop organizers and a group of participants wrote a perspectives paper identifying common root measurements, protocols, and data practices that will facilitate belowground research for productivity and decarbonization.

## Significance

- This paper provides a useful roadmap of practices and needs. Researchers from across the BRCs worked together to develop preliminary plans to ensure BRCs collect root, soil, and microbiome data that will allow synergistic activities.



Understanding roots, soil, and the microbiome in the context of bioenergy cropping system sustainability requires significant data fusion and multivariate analytics combining data from technologies such as UAVs, satellites, and flux towers aboveground, and rhizotrons, minirhizotrons, and sensing technologies such as ground penetrating radar belowground.