

Inter-BRC Report on Frontiers and Opportunities in Bioenergy Crop Microbiome Research Networks



U.S. DEPARTMENT OF
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Office of
Science

Background

- The microbial community associated with many bioenergy crops, grown for high yields of biomass for conversion to biofuels and/or bioproduct, may improve plant performance and sustainability but is poorly understudied.
- Understanding the fundamentals of plant and microbial biochemistry, genomics, and ecology will accelerate progress toward identifying key traits underlying plant health, yield, composition, sustainability, and resilience.

Approach

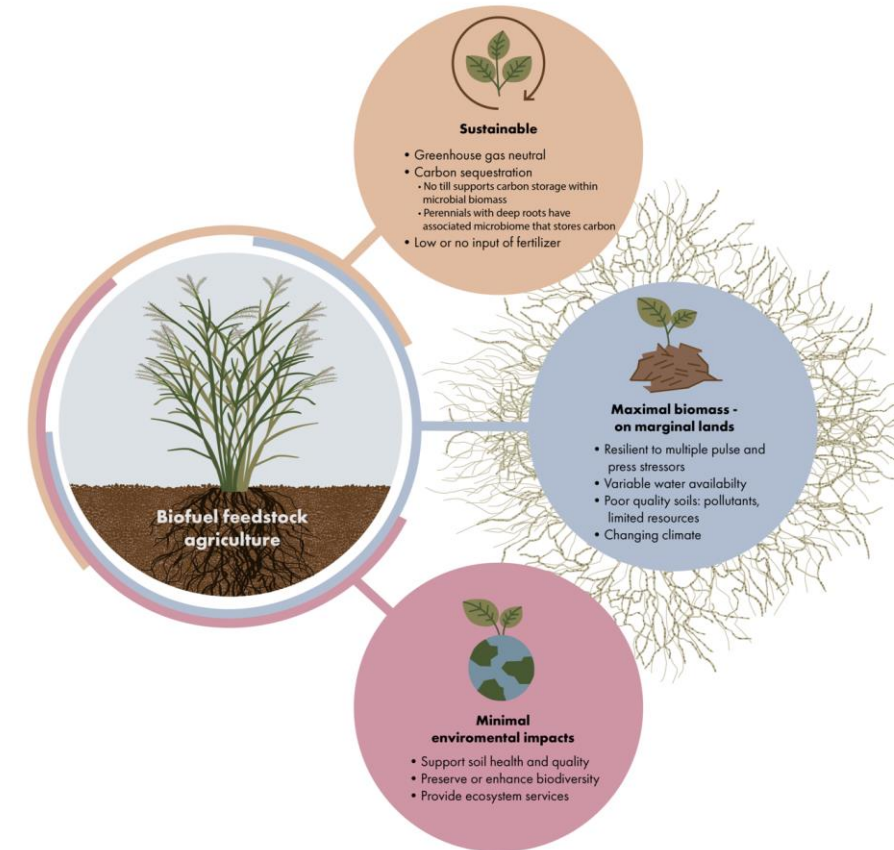
- Researchers from across the four DOE Bioenergy Research Centers (BRC) engaged in a microbiome workshop to identify challenges and collaboration opportunities to better understand bioenergy plant–microbe interactions.
- The virtual workshop included hands-on educational sessions, a keynote on current best practices in microbiome science and community microbiome standards, and multiple breakout discussion sessions.

Outcome

- Key findings of the workshop were the need to a) prioritize data sharing across BRCs and the broader research community and b) secure collaborative infrastructure in the areas of microbiome–ecosystem modeling and molecular plant–microbe interactions.
- A report summarizing the Workshop’s findings was published in *Phytobiomes*.

Significance

- Systematic and interactive research will best leverage BRC expertise and capabilities to tackle bioenergy and sustainability challenges.
- Better understanding and optimization of the bioenergy crop microbiome may help lower feedstock costs and improve year-round feedstock supplies.



Summary of objectives in the production of sustainable bioenergy feedstocks