Bioenergy Research at Boise State University

CAES
Center for Advanced Energy Studies

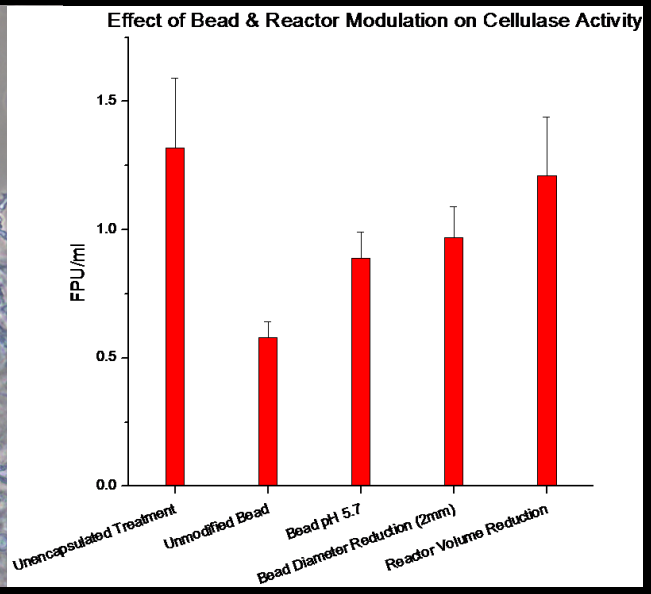
A research partnership between Boise State University, Idaho National Laboratory, Idaho State University and University of Idaho.

Development of Lignocellulosic Biofuel Production Potential in Idaho

Production of Algal Biofuels from Animal Waste Processing

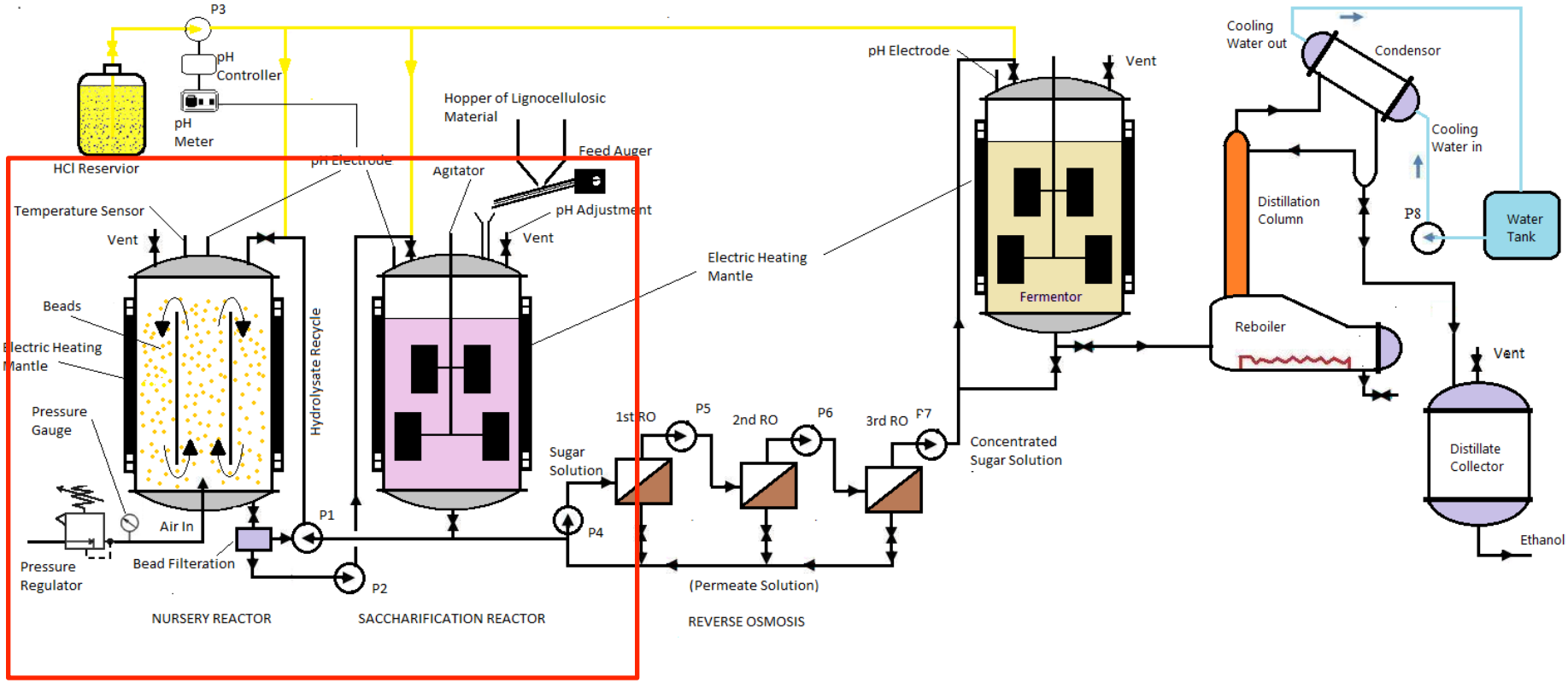
Influence of Switchgrass - root impacts on carbon cycling

BioFuels: Lignocellulose Hydrolysis



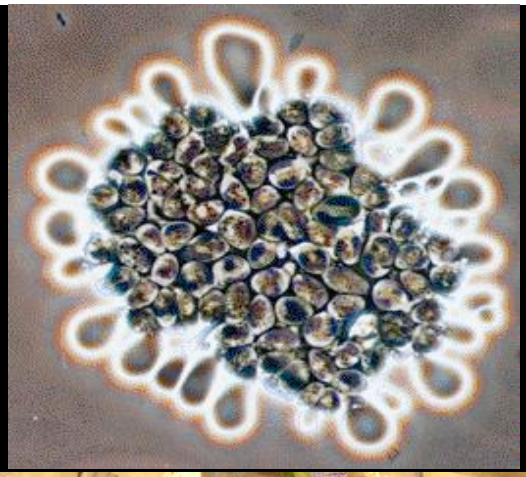
- <u>Funding:</u> CAES Collaborative Research PI: Greg Bala, Co-PIs:Kevin Feris (BSU), Jon VanGerpen (UI), Tim Magnusen (ISU), $450,000 (Proposal # 09-056)
- <u>People:</u> Brian Deis, M.S. Student and NSF GK-12 Fellow (BSU).

Lignocellulose to Fuel: Biocatalyst Optimization for Continuous Flow Nursery and Saccharification Reactor



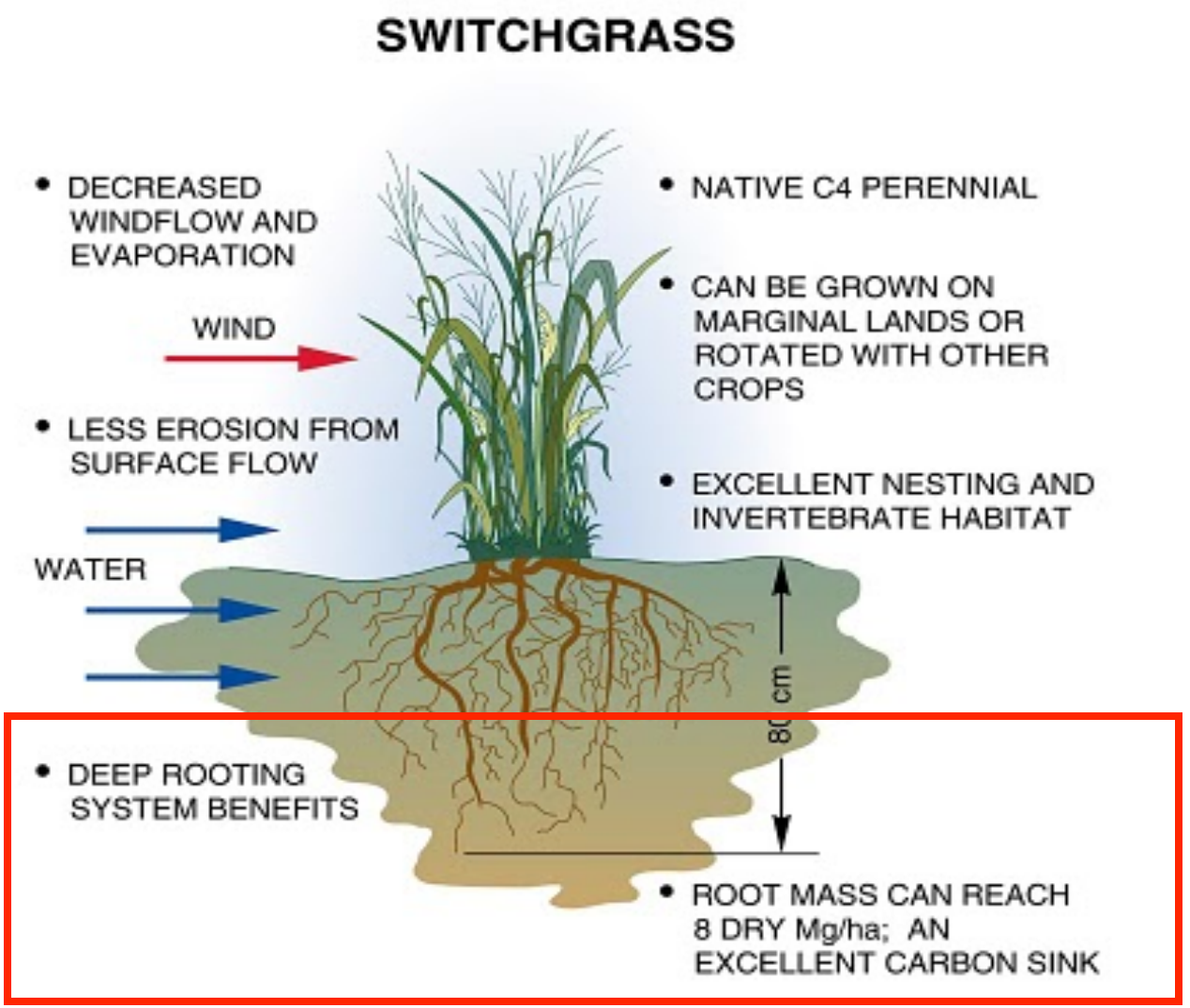
Biofuels: Algal lipid production

- Employing Anaerobic Digestion (AD) to produce natural gas and other products from animal waste (UI, CAES)
- AD effluent is high in N and P
- Efficient nutrient removal by algal cultures
- *B. braunii* produce long chain hydrocarbon lipids that can be refined to transportation fuel (Feris lab, CAES, UI)



Maxine Prior

De Graaf Lab BSU: Switchgrass - root impacts on carbon cycling



Questions

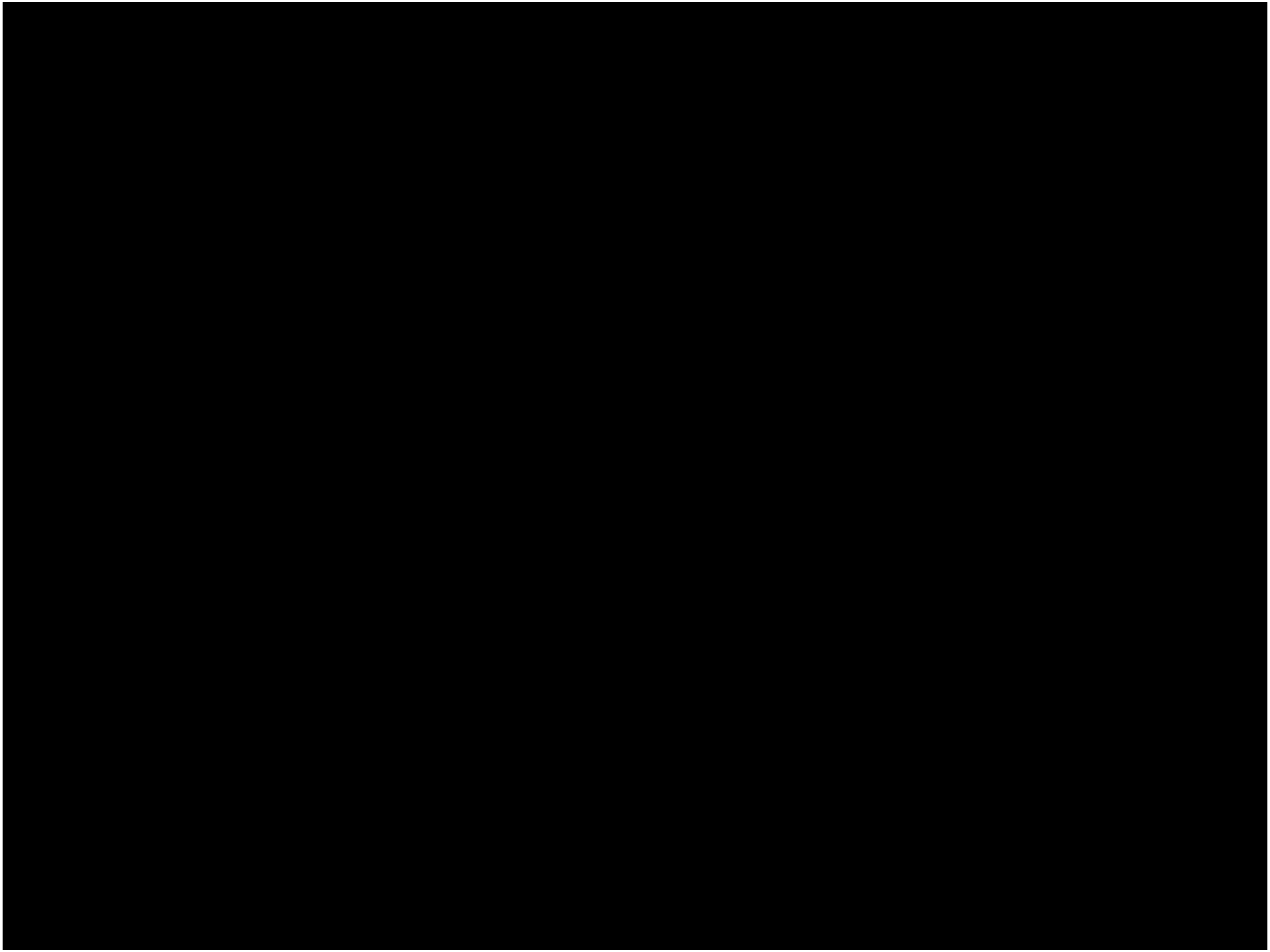
How do different root systems affect the impact of root exudates on decomposition of more stable SOM pools (*i.e.* priming) and microbial function?

or

Can we predict differences in microbial processing of soil C based on the relative abundances of fine and coarse roots in Switchgrass cultivars?

Switchgrass cultivars differ aboveground

….and belowground

Kanlow

Sunburst