



## Kentucky

**Regional objectives:** *Soil degradation; Microbial characterization*

**Production system:** *System of Rice Intensification (SRI), Hay/ Pasture*

**Biochar producer:** *Soil Carbon Innovations*

**University Collaborator:** *University of Louisville*

Kentucky's history of high intensity and disturbance cropping systems, including tobacco, corn, and double-crop soybean, has caused significant soil degradation throughout the Bluegrass State. However, these soils are well-rated for their responsiveness to biochar. Integrating biochar into Soil Health Management Systems (SHMS) has the potential to rapidly reverse historic soil degradation, more rapidly, particularly because stable pyrolyzed carbon is less likely to be lost in warm, humid southeastern production systems. American Farmland Trust, in partnership with the University of Louisville, has an opportunity to study the use of microbial inocula for biochar activation and the important functional roles of soil microbial communities, including mycorrhizal functioning, which supports nutrient and water uptake and pathogen resistance.

Biochar impacts on soil microbial communities will undergo evaluation in partnership with Dr. Sarah Emery, Dr. Natalie Christian, and Dr. Andrew Mehring from the University of Louisville. Soil microbial communities will be assessed using 16S (bacterial) and ITS (fungal) sequencing and arbuscular mycorrhizal fungi (AMF) root colonization on the SRI farm. Soil GHG emissions will also be collected to assess biochar effects on emissions of CO<sub>2</sub> and CH<sub>4</sub> in SRI systems.

### Questions? Contact State Leads:

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