American Farmland Trust

California

Regional Objectives: *High disturbance; Soil moisture*

Production Systems: *Almonds, vegetables*

Biochar producer: *TBD – Local suppliers or Circularity2*

University Collaborator: *University of California – Merced*

California's historic drought and reduced water availability are severely impacting agriculture, hindering farmers' abilities to successfully implement soil health management systems. Adding biochar can increase soil water holding capacity in specialty crops, including orchards and mixed annual vegetable row crops, which are the predominant cropping systems in the San Joaquin Valley. Many of these crops are farmed on sandy soils with high disturbance from frequent tillage, making them likely to respond well to biochar applications. Improved water holding capacity can promote the economic and climate resilience of farms by buffering against drought and associated yield impacts from water stress.

Biochar can improve aggregate stability, infiltration rates, and water holding capacity, while also reducing runoff. By enhancing soil health through the field application of biochar and biochar-compost blends, a pathway is created for the successful adoption of other soil health management practices, particularly in soils requiring less applied water. New biochar producers in the region are now producing quality biochar from local agricultural waste stream products, further enhancing the climate benefits associated with biochar applications. We will continue a state-funded biochar trial in an almond orchard and initiate new trials with historically underserved producers in diverse, high disturbance vegetable systems. Biochar may be an easier practice for these producers to adopt initially, serving as a foundation for soil health management practices with additional technical assistance.

Moisture meters will be used to monitor biochar effects on soil moisture in all trials. A highly replicated, multi-treatment biochar trial on an almond farm will be maintained, leveraging a California State Department of Agriculture Healthy Soils project, from which greenhouse gas emissions measurements will be available.

Questions? Contact State Leads:

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