Advancing Commercialization through the Monitoring, Measurement, and Verification of Large, Established Willow Biomass Crops

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This project will leverage 350 ha of existing willow biomass that were planted between 2006 – 2013 in central and northern NY under the USDA Biomass Crop Assistance program. Our commercial partner, Ramo, is taking over land leases to provide annual income for growers and access for this project. This is a unique opportunity to understand the dynamics of a large-scale, commercially managed SRWC system in the second half of its 20-25 year life cycle (the willow plants are 12 to 16 years old). These fields will be managed by Ramo for a variety of markets, providing an opportunity to collect operational and sustainability data that represents commercial scale operations of older willow crops. We will work with companies that are developing uses and markets for willow biomass ranging from mulch to peat replacement in the horticulture industry to sustainable aviation fuel and renewable diesel producers. The diversity of markets will provide opportunities for the rural workforce and stability for organizations that want to expand the production of willow across the landscape.

The project team has almost 200 combined years of experience working with willow including research and development, breeding and selection, crop management and harvesting, pre-commercial expansion and market development. This project will build on years of successful collaboration among project partners to: (1) Address barriers to the expansion and commercialization of willow biomass crops by collecting and sharing essential data on the management and sustainability impacts from established commercial scale willow biomass crops, (2) Implement innovative practices, such as new planting methods, precision management with UAVs, new genetic material, and a new small scale harvesting system, that together will improve the effectiveness of willow crop management, improve yields, reduce costs, and lower the carbon intensity of the crop, (3) Measure and share data on a variety of environmental and sustainability attributes in willow and develop systems to monetize some of these values, such as carbon sequestration, for willow growers (4) Conduct life cycle (LCA) and techno-economic analyses (TEA) using data collected to document impacts and facilitate commercialization; (5) Work with a range of partners to develop current, near, and long term markets for willow biomass that will support expansion across its growing region in the US.

This project will collect commercial-scale operational and sustainability data across a wide swath of existing willow biomass crops managed by our commercial partner, Ramo. The data collected will add to our understanding of the commercial management of the system across diverse topographic settings, while implementing innovations and improvements to reduce costs and energy inputs, lower carbon intensity, and encourage the development of near- and long-term markets. This project will facilitate the certification of willow for sustainable aviation fuel and other renewable biofuels pathways as well as open access to carbon markets to generate additional value to growers.