

## QUANTIFYING WATER USE OF COVER CROPS IN ROTATION WITH RICE

PI: Kosana Suvočarev, Department of Land, Air and Water Resources, 243 Hoagland Hall, One Shields Avenue, Davis, CA 95616-8627

Co-PIs: Bruce Linqvist, Mark Lundy, Mallika Nocco, Samuel Sandoval, Luke Matthews

California rice fields are highly productive agricultural systems, showing the integration of highly intensive agriculture with valuable ecosystem services. These systems also provide valuable habitat for a wide range of wildlife, including migratory and resident waterfowl.

The creation of seasonal habitat can be done by establishing cover crops in fallow rice fields and maintaining them through the waterfowl breeding season. The cover crops provide a win-win solution for utilizing fallowed lands by providing both soil health benefits and nesting habitat on agricultural lands. Cover crops in Sacramento Valley grown in rice fields rely mostly on rain and water storage in the soil for their growth.

After two years of experimental measurements, the project was extended for one more winter season. The new fields were selected in October 2022 and the equipment is running at two fields, fallow field, and cover crops field, which are two large checks of one field (Figure 1). Most of the water use will be supplied from winter precipitation and soil moisture storage. We will conduct this third experimental season from November 2022 until July 2023 and report the results in December 2023.



Figure 1. Eddy Covariance – evapotranspiration measurements station in rice fallow field near Richvale

On the installation date, we have done soil sampling (down to 8 ft depth) for quantifying the soil water storage at both fields, similarly to previous years, but with more soil samples (Figure 2). We are measuring the gravimetric and volumetric soil moisture content and also sending the samples for lab analysis for soil texture.



Figure 2. Soil sampling for soil water storage: (a) Geoprobe soil sampling, (b) map of the soil sampling locations within both fields/checks; top field check is under cover crop and the bottom field check is fallowed.