

# Parlier Maui Summary

## Assessment of Carbon Accumulation and Evapotranspiration in Sugarcane

### Description

1. Biofuel production from sugarcane or other plant-based feedstocks in the Pacific islands requires knowledge of net carbon balance and crop water demands.
2. Field and remote sensing studies were carried out to characterize net carbon exchange and sugarcane evapotranspiration (ET) over a 2-year cropping cycle on Maui Hawaii.



Eddy Covariance



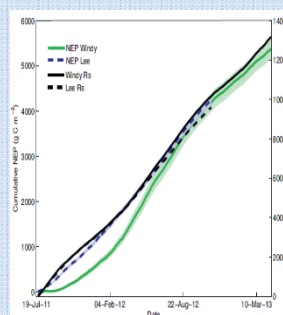
Soil Sampling



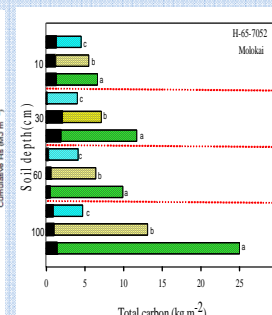
Canopy Cover

### Key Accomplishments & Findings

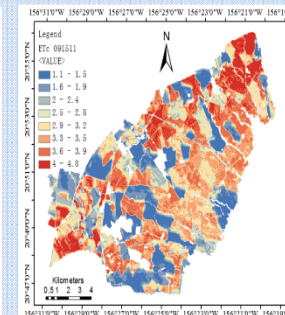
1. Eddy covariance observations showed sustained carbon accumulation during the 2<sup>nd</sup> year of growth, implying continued needs on water and nutrient inputs.
2. Soil carbon profile differed with sugarcane genotype and soil properties.
3. Sugarcane ET can be estimated with satellite images coupled with ground-based daily reference ET.



Net Ecosystem Productivity (NEP)



Soil Carbon Profile



Satellite ET

### Tools & Methods

1. Two tower sites were located representing contrasting microclimatic conditions. Integrated eddy covariance systems were installed on the towers to measure net carbon exchange and ET during a 2-year growth cycle.
2. Soil and plant samples were collected from 4 sugarcane cultivars and analyzed for carbon and nitrogen.
3. Sugarcane ground canopy cover was measured during satellite overpass dates and satellite images acquired and analyzed for crop water use.

### Project Management Information

1. No funding received for the past fiscal years.
2. All initial objectives were accomplished, data analyzed, and findings published in peer-reviewed journals.
3. High frequency eddy covariance data available to the scientific community through AmeriFlux.

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