

# FLAT PLATE ALGAL BIOREACTOR SYSTEM: OPTIMIZED FOR LIPID PRODUCTION AT INTERMEDIATE SCALE

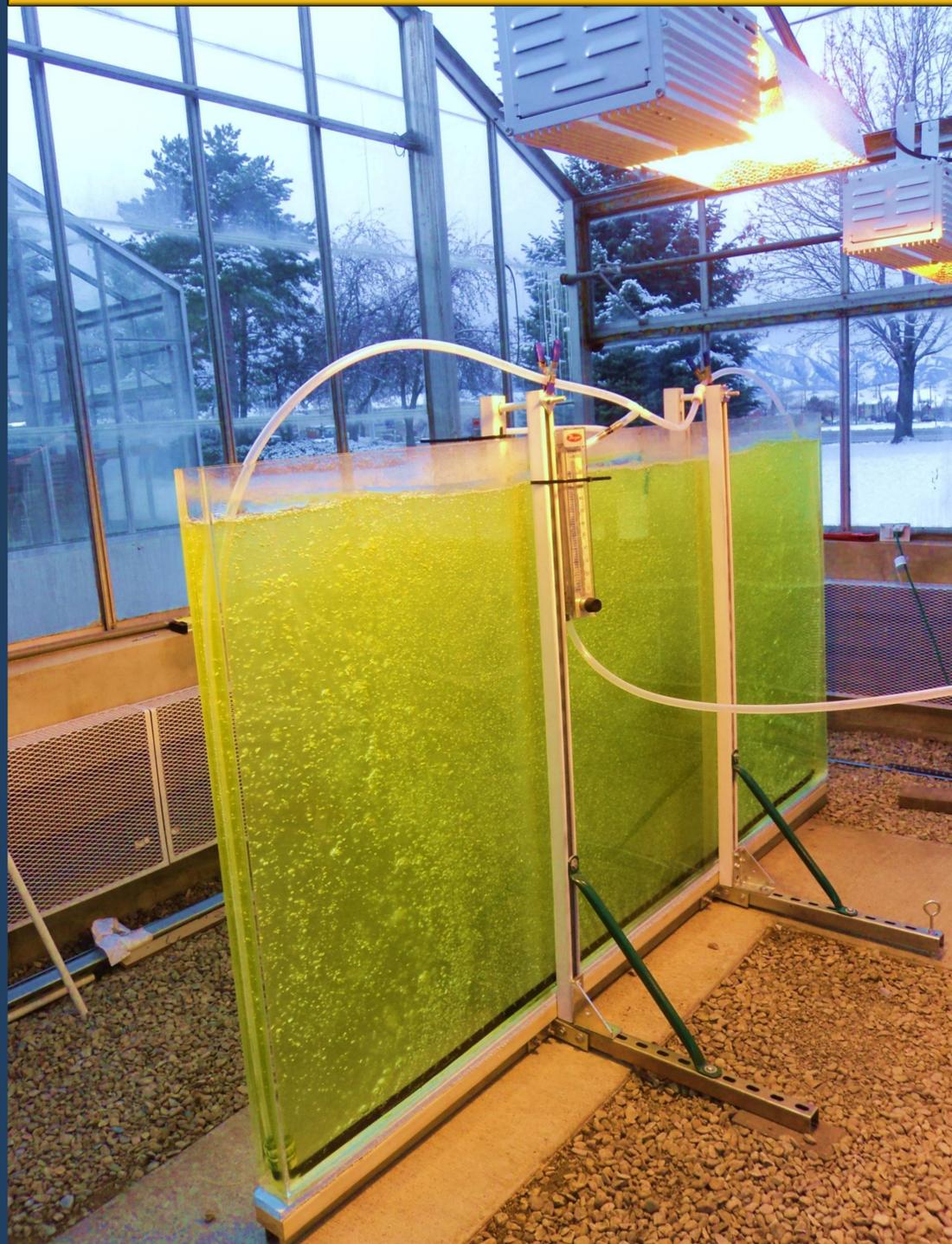


BioEnergy Center

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## 1 OF 6 FLAT-PLATE BIOREACTORS



## BACKGROUND & SYSTEM FEATURES

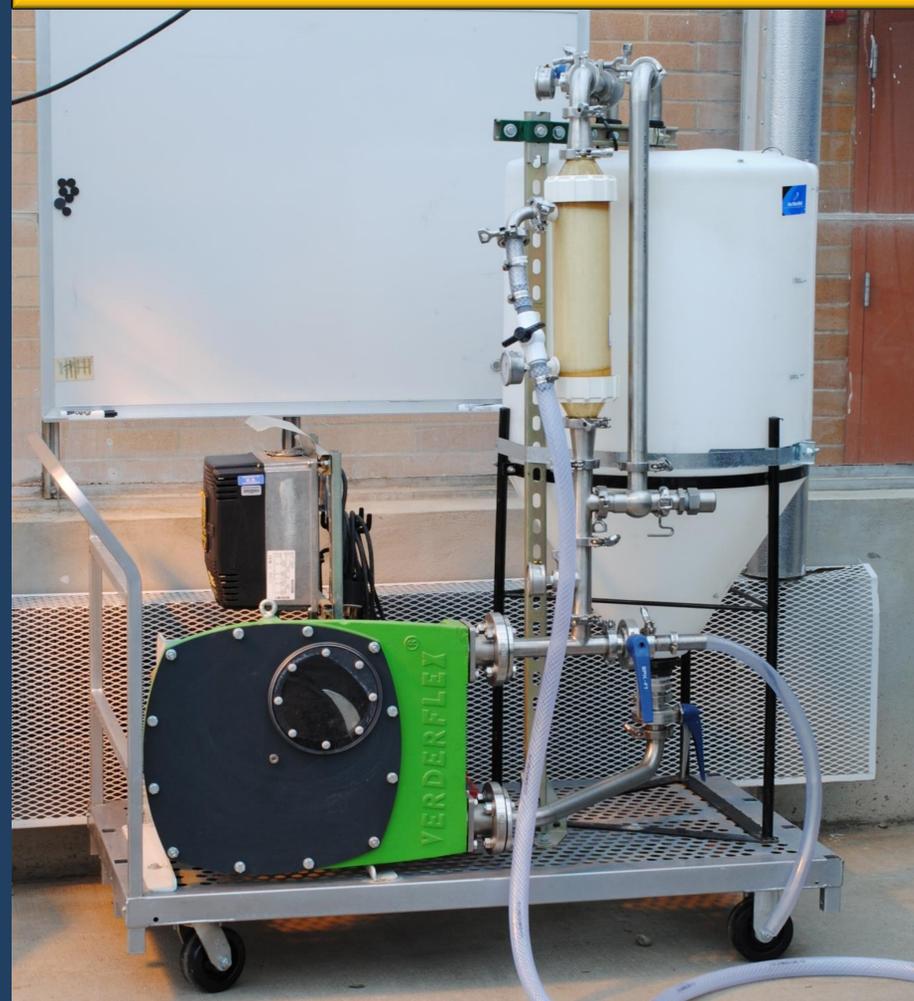
### BACKGROUND:

- GREEN ALGAE PRODUCE LIPIDS IN STRESS, PARTICULARLY NITROGEN DEFICIENCY
- HIGH LIPID PRODUCTIVITY DEPENDS ON:
  - STRESS OPTIMIZATION
  - HIGH LIGHT AVAILABILITY PER CELL
  - ADEQUATE CO<sub>2</sub>
  - ENVIRONMENTAL CONDITION OPTIMIZATION
  - CULTURAL STABILITY
- WE ARE DEMONSTRATING THIS AT INTERMEDIATE SCALE IN SIX FLAT-PLATE BIOREACTORS AT THE USU RESEARCH GREENHOUSES (PICTURE ON LEFT)

### SYSTEM FEATURES:

- 110 CM X 241 CM X 5 CM—130-L VOLUME EACH
- SURFACE AREA TO VOLUME RATIO: 0.4 CM<sup>2</sup>/CM<sup>3</sup>
  - FACILITATES HIGH LIGHT AVAILABILITY PER ALGAL CELL
- CENTRAL MONITORING AND CONTROL OF TEMPERATURE, PH AND CO<sub>2</sub>
- YEAR-ROUND UTILITY WITH HIGH-EFFICIENCY, HPS SUPPLEMENTAL LIGHTING
- EFFICIENT AND SIMPLE HARVESTING WITH CROSS-FLOW MEMBRANE FILTER TECHNOLOGY (PICTURE BELOW)

## CROSS-FLOW MEMBRANE FILTER



## YEAR-LONG LIPID PRODUCTION PROJECTIONS

