



Dr. Omar Holgin (far right) checks on his team's algal wastewater treatment testbed

BIOALGAL ENERGY

The Bioalgal Energy team has made major strides in optimizing the productivity of algae through treatment of wastewater. In Year 4, the team at New Mexico State University demonstrated that they can achieve federal discharge standards in 3–4 days for traditional pollutants. These results are potentially transformative in the industry, converting carbon and other nutrients in the wastewater into biomass that can be recovered and processed into bio-crude oil using hydrothermal liquefaction.

The Bioalgal Energy team is truly inter-institutional, with UNM and NMSU working together hand-in-hand with national labs to measure the composition and function of algal communities in extreme environments. In addition, outdoor growth experiments are improving the growth of algae in various conditions by helping to identify ideal mixes of algal species that produce stable colonies with high output of biomass..

Impacts

- Extensive lab and outdoor growth experiments determined the best algae strain to use for wastewater treatment, contributing to knowledge about extremophiles—organisms that can survive harsh conditions such as extreme temperature or toxic environments
- Lab experiments showed, and pilot-scale demonstrations confirm, algae that creates energy through photosynthesis and consumption (a mixotrophic algae system) achieves 90% removal of effluent from wastewater
- Using algae can reduce energy costs compared to current wastewater treatment systems, and algae can be harvested after water treatment for use as a fuel