Antipodal Algae: Energy Solution for a Tropical Island

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As the emission of carbon dioxide into our atmosphere continues to contribute to climate change, the search for a cleaner energy source prevails. Using algae as a biofuel can replace our use of diesel fuel in American Samoa because algae is both naturally abundant and grows at a fast rate. Algal biofuel is also a very promising fossil fuel replacement due to algae's high levels of lipids which can be extracted efficiently without the use of dangerous chemicals. American Samoa has the ideal climate to grow and harvest algae as biofuel. Applying experimental methods I learned at a biotechnology course at UC Berkeley, I was able to extract algal lipids and convert them into biofuel using the local resources found on our island. After harvesting and growing three of the most abundant algal samples from our island, I measured the mass of each algae species and observed and analyzed my data. In my results, I found that ocean algae reproduces faster than freshwater algae. To test which species contains the most lipids, I combined the lipids with potassium iodide made from coconut ash and found that filamentous algae produces the most algal biofuel. In this project, I was able to convert algae into algal biofuel using local resources and discovered what species could potentially replace our fuel source in American Samoa.

Awards Won:
Third Award of $1,000
U.S. Agency for International Development: Second Award Climate and Environmental Protection