

NON -TECHNICAL ABSTRACT:

Biodiesel fuels have been prepared from a wide variety of feedstock oils, most commonly soybean and rapeseed (canola) oils. While extraction of oils from soybean and canola feedstocks is relatively easy, neither of the crops is grown in any significant quantity in California (California produces less than 1% of the total United States soybean output). Additionally, soybean and canola have become increasingly embroiled in the “food versus fuel” debate, leading researchers to consider alternative biodiesel feedstocks from locally available plant, agricultural, and agricultural waste sources. Local feedstocks could keep money in California, providing a renewable fuel for transportation and farm equipment alike. However, extraction of oil from alternative feedstocks is considerably more difficult. Producing feedstock oils from plant-based sources such as algae requires light, and one common way to grow algae is on an illuminated shaker table. Additionally, extraction of oil from plant and agricultural sources is facilitated by milling to either 1) break down the plant material or 2) increase the surface area of agricultural products. Undergraduate, graduate, and professional science master’s students involved in the project will make extensive use of the new shaker table and milling equipment as they investigate a wide variety of biofuel feedstocks. The overall objective of the work is to purchase the equipment that will allow us to assess the feasibility of producing sustainable biofuels using locally obtained plant, agricultural, and agricultural waste feedstocks that will have little negative impact on the food chain.