

Project Final Report
April 2012
SIUC-Dairy Club and Farm

Project Title: Turing Dining Grease into Fuel and Feedstuff.

This project was awarded to SIUC Dairy farm and Dairy club last year to fulfill the following objectives:

1. Eliminating a waste stream from the university dining facilities while providing a cleaner, renewable energy source at reduced cost.
2. Provide SIUC students and community members an educational opportunity to have a hands-on learning experience through the operation, maintenance, evaluation, and distribution of the biodiesel fuel process.
3. Conduct nutritional and economical evaluations on the effects of substituting glycerol for corn in livestock diets.

A fully automated biodiesel processor with the capacity to process approximately 600 gallons of oil per week was purchased and installed in a newly constructed biodiesel laboratory at SIUC. The biodiesel laboratory was constructed to meet the IEPA (Illinois Environmental Protection Agency) requirements and it provides the equipments and tools not only to produce biodiesel but also to store and to test the quality of the biodiesel made at SIUC. Over the course of the last 3 months, approximately 750 gallons of biodiesel were produced in this laboratory from waste oils collected from SIUC cafeterias. We expect our production capacity to reach 250 gallons per week once the training for the remaining students in our club is complete. The produced biodiesel is currently being used to power some of the equipment's used by the SIUC-dairy farm (saving the farm approximately \$1200). Currently, two students in our SIUC dairy club are being trained on how to produce and test the quality of generated biodiesel. This training is being done

under the supervision of the dairy farm manager (Mr. Chet Stuemke) and Dr. AbuGhazaleh. Additionally, we are currently collecting the glycerol (biodiesel by product) in specified drums for temporary on-site storage until its use in dairy feedings. Research in our laboratory with in vitro system has already showed that glycerol may be fed safely to dairy cows at 10% of their diet. A full article in the DE was published about the new biodiesel laboratory on 2/17/2012 'Recycled vegetable oil becomes food, fuel'. Additionally, the entire process of converting waste oil to biodiesel is now serving as a "living classroom" for our students and community members. Several onsite tours and live demonstrations have been given to individuals over the course of the last 2 months. Additionally, we currently have plans to use this laboratory as a research site to explore research ideas related to biodiesel production efficiency and product quality.

SIUC-Dairy Club:

SIUC-Dairy Farm:

SIUC- Club and Farm Faculty Advisor: