



ESW
BIOFUELS

Newsletter
Spring 2020



Engineers for a Sustainable



World

Develop

Promote

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ESW Biofuels

Biofuels has welcomed 3 new members! Dhruv Girgenti is a junior from Westchester, NY studying Operations Research. He is most excited about working with Cornell Cooperative Extension on the Energy Warriors Program as a member of Business & Outreach. Serena Zhao is a sophomore from Sheyang, China majoring in Operations Research. She is most excited to learn more about renewable energy as part of Business & Outreach. Rebecca Foody is also joining Business & Outreach. She is a sophomore from West Milford, New Jersey majoring in Environmental Engineering with a minor in Climate Change. Rebecca is most looking forward to working with kids in collaboration with the Ithaca Sciencenter.





Biodiesel Engine Project

Biodiesel Engine Project (BEP)

In the Spring 2020 semester, BEP continued working to convert one of Cornell's diesel tractors into a biodiesel-fueled tractor. By early March, BEP had successfully installed both the PEMS (portable emissions moderating system) unit, which collects tailpipe emissions and the vector system, which lets the tractor run on the biodiesel, soy B100. In order to measure the effectiveness of the system,



the BEP team had planned to collect the biodiesel emissions and compare it to standard diesel emissions, but this was put on hold due to the Covid-19 pandemic. After social distancing guidelines were put in place, BEP continued working with its biodiesel distributor—Renewable Energy Group—to make estimates regarding the emissions associated with manufacturing the biodiesel and transporting it to campus.



Research & Development

In the Spring 2020 semester, R&D subteam continued working on Microbial Fuel Cells (MFC). In Fall 2019, they prototyped an MFC reactor. This semester, they were trying to confirm a lab space within Soil and Water Lab so that they could utilize this reactor to test wastewater. R&D also continued working with the Tester group. This semester, they met with the group to try to explore more new long-term projects. This resulted in the team conducting Struvite modeling and water recycling.





Bioenergy Implementation

Biolmp worked on three main projects this semester. They organized and completed their annual L.I.V.E.S. Challenge and are now brainstorming ideas for both next year's prompt and how to further increase participation. Though currently on hold, another project was the Teaching Dairy Project, where the team is determining the best solution to improve equipment lifetime. Biolmp is also working on a project with Cirenas, a sustainable living community in Costa Rica to improve their human waste Anaerobic Digester. Unfortunately, travel for the project at this time is on hold due to Covid-19.

This year's challenge is **Off-grid Energy Solutions**, to develop a design for an energy system that takes advantage of renewable resources to power a community with limited access to electricity.



1.1b

PEOPLE WHO DO NOT HAVE
RELIABLE ACCESS TO ELECTRICITY





Business & Outreach

This semester, B&O met with Professor Jillian Goldfarb in BEE to discuss structuring lesson plans for the Energy Warriors project, which aims to educate juveniles in the Finger



Lakes Residential Center about sustainable energy. The team had also developed plans for environmental and sustainability lessons at the Ithaca Sciencenter, including a demonstration on the different densities of oil and water. Unfortunately, this event was canceled due to Covid-19. B&O is also working on training its members in website maintenance and developed the Cornell ESW Biofuels newsletter.



