Viability of Alternative Fuel Sources for Agriculture Applications in the Pursuit of Lowering Carbon Emissions

Mitchell, Kiersten (School: Fremont High School)
Selman, Garrison (School: Fremont High School)

The purpose of this project is to determine whether alternative carbon-based fuel sources have a cleaner emissions output than gasoline. As the world changes so do laws around fuel utilization. Legislation in many areas is moving toward electric-powered vehicles. Electricity is not currently viable for powering agricultural equipment. Other alternative fuels that run cleaner and put out fewer pollutants that cause harm to the environment may be more feasible. In this study, E-0 gasoline, E-10 gasoline, liquid petroleum gas (LPG), and isopropyl alcohol were used. These alternative fuels were run through a 212 cubic centimeter (CC) gasoline engine, with an off-the-shelf modified carburetor, on which, carbon emissions outputs were tested. The results are as follows: the control E-10 gasoline ran 246 parts per million (ppm) hydrocarbon (HC) and 3.52% carbon monoxide (CO) on average. E-0 gasoline ran at 245 ppm HC and 5.13% CO on average. LPG ran at 1 ppm HC and 1.49% CO on average. Isopropyl Alcohol 242 ppm HC and 0.07% CO on average. Isopropyl Alcohol was found to have the lowest CO output while LPG had the lowest HC output on average.