Better Biodiesels: Converting Autumn Olive Oil into Winterized Fuel

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Diesel fuel is used for a variety of things that make our daily life possible; however, it has issues. One solution for them is Biodiesel, an eco-friendly fuel... that also has issues. Issues like expenssive repairs that one must do to their engine due to its high gelling points and food shortage and soil erosion that it causes. Purpose of this study is to determine if Autumn Olive Oil can be used to make winterized biodiesel, for the use of this plant would have many positive impacts on the enviroment and the economy, while solving those two main issues. To get our results we extracted oil from Autumn Olive seeds and boiled it to its boiling point, then cooled it near its freezing point to winterize it. Then mixed the Autumn Olive Oil with a Methanol/Lye solution. Then, after biodiesel and byproduct were formed and separated, we tested its gelling point by putting it on freezer and checking at what temperature it became gel. The same process was done to the other vegtable oil. In conclusion, our hypothesis was right. Autumn Olive Oil did react with the methanol and lye solution, creating a Winterized Atumn Olive Oil Biodiesel with a lower gelling point than the Winterized Canola Oil Biodiesel. It also: non-toxic; 100% biodegradable; produces a lot less emissions than petroleum diesel; can reduce greenhouse gases down to 78%; saves money spent on engine care; saves and preserves native species of the USA; doesn't cause erosion, Autumn Olive fixes it with its nitrogenfixing roots; good for economy. A future Application research that we are very interested in is changing the ingredient methanol to another chemical that does not cause so much harm to humans, the enviroment, etc., and we are also very interested in making the gelling point lower than -10 degress celsius.

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