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Biodiesel Extracted From Sunflower

Mzumbe Secondary School

Sebastian D. Sulumo and Elisha M. Kato

Introduction

In this modern world of industrialization, there has been a tremendous increase in demand for fuel especially in transportation systems. However, the environmental degradation caused by excessive use of fossil fuels have made it necessary to introduce an alternative renewable energy source which is more environmental friendly.

Biodiesel is a renewable fuel obtained from plants or animal fats. It is suggested to be the good alternative fossil fuel since it is renewable and its combustion emits less amount of carbon dioxide gas. In our project we are going to extract biodiesel from sunflower. Being commonly grown in Tanzania especially in Singida, Dodoma and Manyara, sunflower is our crop of choice for producing biodiesel as it gives higher yield of oil per hectare and it is a drought tolerant crop.

Method.

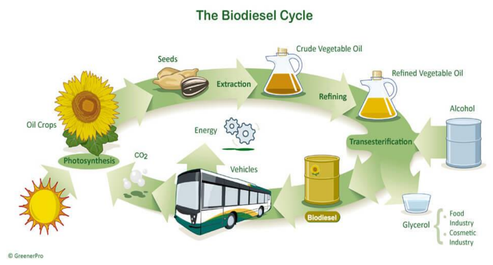
We used questionnaire as a research tool for collecting data. A three question sample questionnaire was prepared and used to collect data. Also, we passed through various published articles including EWURA (Energy and Water Utilities Regulatory Authority) reports on daily consumptions of petroleum fuels in Tanzania.

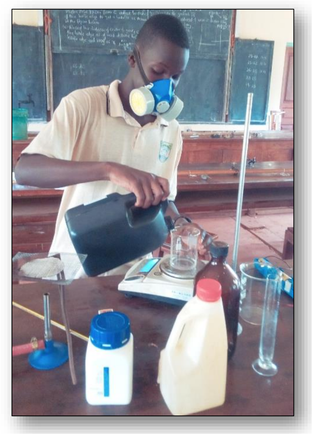
The reasons of using the above mentioned methods are as follows;

Questionnaires.

Advantages.

- The data collected was strictly focused on the research.
- It consumed little time in data collection.
- Questionnaires give flawless evidence on data collection.
- The obtained data were easier to interpret and analyse.





Procedure

Data was collected based on following categories;

i. CATEGORY 01:

AIM: To collect information concerning the demands of fuels in Tanzania.

METHOD: Data was obtained from some related published articles of EWURA on the report concerning daily consumption of fuels in Tanzania.

ii. CATEGORY 02:

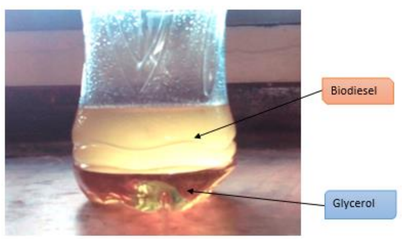
AIM: To collect information about the environmental and social problems associated with petroleum diesel and importance of introducing biodiesel in Tanzania.

METHOD: Questionnaire.

A three question sample close questionnaire was prepared and was used to collect data from people of different occupations and localities.

iii. CATEGORY 03:

AIM: To gather information on the crop choice for making biodiesel in Tanzania.



Results

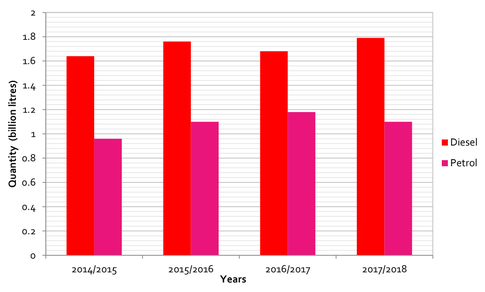
CATEGORY 01:

These are results taken from the first category of our research; we conducted a group discussion and pass through various references like EWURA report to know the demands and consumption of petroleum oil and diesel in Tanzania. We compared the demands for diesel and petrol in the country in the pie chart.

From the EWURA report on the demands of petrol and diesel and their consumptions in the year, 2016 the following data were collected:

Thus, from the above obtained results on the demands of fuels in Tanzania, it is clear that demands of diesel are higher than that of petrol. Therefore, the production and use of biodiesel will lead to diversification of energy sources as well economic development in the country.

Types of fuel	2014/2015	2015/2016	2016/2017	2017/2018	TOTAL	AVERAGE
Diesel(billion litres)	1.64	1.76	1.68	1.79	6.87	1.72
Petrol(billion litres)	0.96	1.1	1.18	1.1	4.34	1.09



Conclusions

The biodiesel produced could be at almost equal price or even a bit higher than that of petroleum diesel depending on price of sunflower in the market. For example the current price of sunflower sack in the market ranges from Tshs.5000 to Tshs.7000 which gives 20 or more litres of oil.

To produce more favoured economically biodiesel, waste oil which is obtained at a cheaper price could be used as a raw material where it has to be refined well in order to give a quality biodiesel. Also ethanol can be made abundant as it can be obtained through local fermentation of carbohydrates. The amount of catalyst required is very small.

The following are some of the other advantages of biodiesel when compared with petroleum diesel;

Biodiesel is biodegradable and thus, wastes associated with its production can easily decompose.

Biodiesel is a renewable fuel.

Biodiesel does not produce sulphur wastes to the environment since its sulphur-free

It prolongs the life of the engines because it has cleaning effect as well as lubricating effect.

It has higher flash point than petroleum diesel and therefore its storage and transportation is safer than that of petroleum diesel.

Acknowledgments

We would like to thank GOD for enabling us to conduct this project successively. This project is the result of combination of the efforts of many people including the society from which we collected data through questionnaire