Typhi capensis (Reed) Biofuel

Bvungo, Memory (School: Dominican Convent High School Harare)

The world is scrambling for renewable and environmentally friendly biofuels in the hopes of omitting fossil fuels that have harmed the earth. The environmental impacts of these malicious fuels glare at us as global warming, the massacre of wildlife and pollution of water by oil spills, among other dire impacts. Zimbabwe produces only 15% of it's ethanol from sugar cane to be blended with petroleum meaning 75% of fuel meant for vehicle consumption and more is imported, more than any SADC country has ever imported. To add on, sowing, pumps out further production costs. Sugar cane's vulnerability to seasonal changes further reduced the amount of ethanol produced. The researcher engineered a reed based bioethanol sourced from fast growing,persistent reeds that were abundantly available in the country and were usually victims to veld fires though they sprouted out shortly after, depicting potential in slashing many production costs incurred in sugar cane sowing. Various tests were carried out on the reeds and sugar cane extracts to test for sucrose and determine it's concentration through simple dilution. A pressure cooker was used to sterilise and concentrate the reed extract before fermentation. To test the feasibilty of obtaining ethanol from reeds the researcher carried out fractional distillation of the sterilised, concentrated and fermented reed extract which in turn yielded ethanol. According to results more non reducing sugars(sucrose) were present in the reeds extract than in sugar cane, indicated by the desirable brick red colour with the Benedict’s test, hence the researcher concluded reeds could be used to produce high ethanol yields.The rest of the by-products were converted to various other biofuels. Enzymes and fungi could degrade inhibitors in future.

Awards Won:

Third Award of $1,000