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Sustainability can be profitable and profitability can be sustainable: Converting trash into valuable recyclable commodities

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Biodiesel is a naturally occurring biofuel as its greenhouse gas emissions are lower than those of global warming. Biodiesel is produced from renewable sources, is flexible, non-toxic, has no fragrant compounds, and for example biodiesel from castor oil has a lower cetane content (43.7) than that of conventional diesel. One of the main advantages of biodiesel is its high oxygen content (> 10%) which promotes and improves resistance systems in diesel engines. In addition, it does not contain sulphur, so no harmful oxidation is produced between its compounds and is released into the natural environment. Increasing awareness of the environmental effects (global warming) caused by the use of fossil fuels and the natural benefits of using renewable biodiesel and ecosystems have made biodiesel more attractive in recent times. Research has been done on the conversion of castor oil into biodiesel. Ricinus communis (castor bean) is a powerful feeder dye, which can provide up to 60% of the stable oil needed to produce biodiesel. Castor bean plants show strong adaptability to changing climates, in that they are able to grow in well-drained soil. The major fatty acid in castor oil is ricinoleic acid (C18H34O3), which is approximately 80-90% of the fatty acid content. It provides features such as high appearance, low iodine visibility, low detoxification area, making it an ideal product for the production of biodiesel During biodiesel production it is nential aryto consider the ecological and economic benefi which increases its production and its use as a biofuel. However, the types of castor oil used were not specified and little effort was made to address the effects of pre-treatment oilseed treatments on biodiesel structures and structures. Therefore, this study investigates the production and measurement of biodiesel using oil from four types of castor seeds. Four species of castor seeds identified on the basis of their colour and size; White Big size (WBS), Black Big size (BBS), Gray Medium size (GMS) and Gray Small size (GSS) used. Castor oil is obtained from raw and head-dried seeds by a variety at a constant pressure of 135 N / m2, using a hydraulic press for a pressing time of 12 min. Castor oil shown in each of the various forms is transmitted by using anthanrous methanol, using potassium hydroxide (KOH) as an effect. The Castor methyl ester (CaME) process parameters used were concentration (1, 1.5 and 2%), temperature (30, 45 and 60oC) and reaction time (15, 30 and 60 min). In all experiments, a methanol / castor oil molar ratio of 6: 1 was used. Biodiesel yield was produced and the resulting oil was shown to detect petrol properties. The control model is designed for biodiesel yield and reaction method (RSM) used to ensure that the polynomial equation is resolved using the Design-Expert 7.0 Software. Response (RSM) is a widely used mathematical and mathematical method of modelling and analysing the process in which interest response is affected by a variety of variables [1] and the purpose of this method is to add feedback Comparative tests are performed using statistical package stat-ease good yield of biodiesel and biodiesel structures. The highest yield of biodiesel of 98.20% was obtained from raw GMS. Biodiesel yields varied with seed varieties, and were influenced by temperature, reaction time, air concentration, seed environment and interactions. The observed difference between biodiesel compounds found in different types of castor seeds was significant at the 5% level. The oil from the unripe seeds provided the highest biodiesel conversion, with the highest yields obtained in GMS followed by GSS, then BBS and finally WBS. Types of GMS

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