Production And Applications Of Biodiesel Derived From High Acid Value Feedstocks

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ABSTRACT

Biodiesel is an oil derived fatty acid methyl esters that is produced through esterification processes. It could be produced from various types of oils including vegetable, animal and waste oils. Depending on the type of feedstocks used, the process of esterification must be tailored to the properties of the raw materials. Depending on the origin of the oils, different pre-treatments are required starting from the extraction of the oil. Two step process must be employed for feedstocks with high free fatty acid (FFA) values (>5%) as opposed to the one step transesterification step for feedstocks of lower FFA values. Crude seed oils (Jatropha and Bintangor Laut) and waste oils (Used Cooking Oils - UCO and Grease Trap Oils-GTO) are usually high in free fatty acid (FFA) values thus requiring further refining and/or a two-step esterification process. Among the most challenging feedstock carried out on FRIM's pilot plant are the grease trap waste oils from effluents and waste cooking oils. Starting from the preparation of the raw material up to the product (biodiesel) applications, smart and sound decision must be made during the production of biodiesel and identifying their end uses. After biodiesel production, identifying the product (biodiesel) applications suitable with their properties is very important due to the environmental and public health contributions of the whole value chain. End use should be identified based on the biodiesel stabilities. The benefits of extracting, conversion and application of the oils and biodiesel are tremendous. This paper will discuss the challenges faced in producing biodiesel of different properties from various feedstocks focusing on the jatropha, bintangor laut crude seeds oil, grease trap and waste cooking oils and their applications.

Keywords: *biodiesel, properties, seeds oil, waste oils, applications*

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