

Biodiesel Production from Broiler Chicken Waste

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Abstract : Broiler slaughter waste has become a major source of pollution throughout the world. Utilization of broiler slaughter waste by dry rendering process produced Rendered Chicken Oil (RCO) a cheap raw material for biodiesel production and Carcass Meal a feed ingredient for pets and fishes. Conversion of RCO into biodiesel may open new vistas for generating wealth from waste besides controlling the major havoc of environmental pollution. A two-step process to convert RCO to good quality Biodiesel was invented. Acid catalysed esterification of FFA followed by base catalysed transesterification of triglycerides was carried out after meticulously standardising the methanol molar ratio, catalyst concentration, reaction temperature and reaction time to obtain the maximum biodiesel yield of 97.62% and lowest glycerol yield of 6.96%. RCO biodiesel blended was tested in a Mahindra Scorpio CRDI engine. The results revealed that the blending of commercial diesel with 20% RCO biodiesel lead to less engine wear, a quieter engine and better fuel economy. The better lubricating qualities of RCO B20 prevented over heating of engine, which prolongs the engine life. The blending of biodiesel at 20% to commercial diesel can reduce the import of costly crude oil and simultaneously, substantially reduce the engine emissions as proved by significantly lower smoke levels, thus mitigating climatic changes.

Keywords : broiler waste, rendered chicken oil, biodiesel, engine testing

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