257f Impact of Blending Traditional and Non-Traditional Lipid Feedstocks for the Production of Biodiesel

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The high price of biodiesel is largely due to the high price of the lipid feedstock. Soybean oil is the most commonly used lipid feedstock in the US. However, many states, such as Mississippi, produce vast quantities of other lipid sources that have not traditionally been considered as lipid feedstock for biodiesel. Examples include catfish oil collected from fish processing wastewaters, rendered poultry oils derived from slaughter operations, Chinese tallow oil, palm oil, acidulated fatty acids, and tung oil. Many of these have characteristics that are traditionally not considered of high value in terms of the resulting biodiesel product. However, no work has focused on the possibility of blending these feedstocks into a common feed for the transesterification process as an attempt to provide a functional fuel at the same time reducing processing and feedstock costs. Given the recent changes in the federal tax code, it is anticipated that many biodiesel facilities that are going on-line with fuel production may experience significant problems with locating and purchasing lipid feedstocks. The blending of these novel lipid feedstocks for the production of biodiesel needs to be evaluated to ensure quality, and availability at a constant price. By utilizing a battery of carbon-neutral feedstocks, biodiesel production plants will be able to sustain steady production of biodiesel. This paper will present the impact of blending traditional and non-traditional lipid feedstocks and testing the resulting fuel products (fatty acid methyl esters) using ASTM D 6751 methods and supporting gas chromatography used to assess the fatty acid profiles for the lipid blends. An overview of resulting process economics will also be presented to provide a comprehensive framework for considering producing biodiesel under the proposed lipid feedstock management protocol.