

Comparative Performance and Emission Analysis of Diesel Engine Fueled with Diesel and Bitter Apricot Kernel Oil Biodiesel Blends

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Abstract : Vegetable oils are produced from numerous oil seed crops. While all vegetable oils have high energy content, most require some processing to assure safe use in internal combustion engines. Some of these oils already have been evaluated as substitutes for diesel fuels. In the present research work Bitter Apricot kernel oil was employed as a feedstock for the production of biodiesel. The physicochemical properties of the Bitter Apricot kernel oil methyl ester were investigated as per ASTM D6751. From the series of engine testing, it is concluded that the brake thermal efficiency (BTE) with biodiesel blend was little lower than that of diesel. BSEC is slightly higher for Bitter apricot kernel oil methyl ester blends than neat diesel. For biodiesel blends, CO emission was lower than diesel fuel as B 20 reduced CO emissions by 18.75%. Approximately 11% increase in NOx emission was observed with 20% biodiesel blend. It is observed that HC emissions tend to decrease for biodiesel based fuels and Smoke opacity was found lower for biodiesel blends in comparison to diesel fuel.

Keywords : biodiesel, transesterification, bitter apricot kernel oil, performance and emission testing

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