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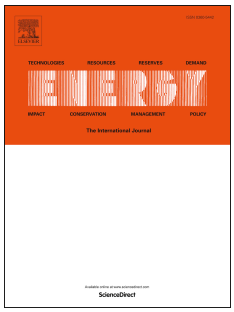

Performance, combustion and emission characteristics of diesel engine fuelled with papaya and watermelon seed oil bio-diesel/diesel blends

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Performance, combustion and emission characteristics of diesel engine fuelled with papaya and watermelon seed oil bio-diesel/diesel blends

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ABSTRACT

In this paper, we have produced bio diesel from papaya and watermelon seed oil by trans-esterification process using methanol and KOH (catalyst) and a new biodiesel i.e. WP is produced which is a mixture of papaya seed oil biodiesel and watermelon seed oil biodiesel in 1:1 ratio is prepared. The blends (B0, B20, B30, B40, and B100) of WP with diesel and watermelon 100% and papaya 100% are used for further testing. The performance, combustion and emission test were conducted on single cylinder 4-stroke diesel engine using different blends of these biodiesels and the results showed that B20 is superior blend among other biodiesel blends. Further the performance and combustion characteristics of B20 is very close to diesel while the emission characteristics of B20 is better than that of diesel as the emission of CO, HC and smoke is 27.27%, 23.8%, 8.3% less for B20 than diesel respectively. Thus we concluded that B20 is the most suitable blend of WP for substitute of diesel which will reduce diesel consumption by 20%.

Keywords: Watermelon, papaya seed oil, biodiesel, diesel engine, combustion, emission.

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1. Introduction

We live in a world where machines play an important part of our life. We need different kind of machines for different purposes in our daily life. Thus it is very important to maintain a continuous supply of fuel (source of energy) for these machines. Diesel engine plays a crucial and indispensable role in today's world and at the same time contributes to pollution extensively. Since the resources required producing petrol and diesel are depleting day by day. The universal reserves for these fossil materials are limited and it has been estimated that the reserves will remain for another 200 years for coal, 40 years for oil and 60 years for natural gas. [1] India imported nearly 70% of its crude oil requirement (90 million