COMPARISON OF PERFORMANCE AND EMISSION TESTS USING BIO DIESEL FROM SIMAROUBA AND HONGE OILS IN CI ENGINE

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Introduction
India is one of the developing countries which imports crude oil from other countries to fulfill their requirement also to meet the local demands of petroleum products. Hence the government is going for another alternative way for fuel like India’s biofuels policy, biodiesel derived from non-edible oils is considered as a substitute for diesel. Among the available non-edible oils, Honge oil and Simarouba oil has considerable potential for the production of biodiesel.

Simarouba belongs to the family Simaroubaceae Quasia It is also known as paradise tree, Laxmi taru, Acetuno, a multipurpose tree that can grow well under a wide range of hostile ecological condition. Its origin is native to North America, now found in different regions of India. It was a medium sized tree generally attains a height about 20 m and trunk diameter approximately 50 – 80 cm and life about 70 years.

The botanical name of the Honge is Pongamia pinnata and is a medium sized tree. It generally attains a height of about 8 m and a trunk diameter of more than 0.50 m. The alternate, compound pinnate leaves consists of 5 or 7 leaflets which are arranged in 2 or 3 pairs and a single terminal leaflet. Its pods are elliptical and each pod contains usually a single seed which has 30 to 35% oil content. The seeds are 10 to 20 cm long and light brown in colour. The number of honge plants which can be planted in an acre is 200. The yield per tree is 25 to 40 kg depends on the age, region, soil, climate etc.

Objectives
- To produce a biodiesel from Simarouba and honge oil.
- To Determine the properties of simarouba & honge oils.
- To Compare the properties of simarouba and honge with ASTM standards.
- To determine the performance test on simarouba and honge oil in CI engine.
- To determine the emission test on simarouba and honge oil in CI engine.

Experimental procedure for production of Bio-diesel.
TRANSESTREFICATION PROCESS:
- Now take 1 litre of sample oil.
- That oil is to be heated up to 55 to 60°C temperature but not exceed 70°C.
- Now take 200 ml of methanol or ethanol, in to that add 4.5 grams of KOH. Shake that mixture well up to KOH dissolved fully. It will become potassium methoxide solution.
- Now add that solution to 1 litre sample oil with constant stirring of raw oil, Stir up to 10 to 15 minutes.
- Leave that solution to settle down up 8 to 10 hours.
- It will form two distinct layers.
- Upper layer is called Bio-diesel and lower dark and thick layer called glycerine which is used to make soap.
Expected Outcome of the project:

- To get Simarouba and Honge oils as alternative fuels.
- To compare both Simarouba and Honge bio-diesels and selecting the best one.
- To obtain the Simarouba and Honge bio-diesels with almost same properties of Diesel.
- To get good performance with simarouba and honge Bio-Diesel in CI engine.
- To reduce the emissions with simarouba and honge Bio-Diesel in CI engine.
- To provide alternative fuels to the society.