

Greenhouse gases emission in soybean biodiesel life cycle: methylic route x ethylic route

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Petrodiesel is the most consumed oil derivate in Brazil. Due to the Brazilian oil profile refining, in 2003 it was necessary to import about 10% of the consumption (3.8 millions cubic meters) which represented an outcome of about US\$ 1.8 billions.

Considering technical, economical, environmental and social issues, the Brazilian federal government created in 2004, the National Biodiesel Production and Use Program, aiming to the implementation of a sustainable production and use of biodiesel. According to a federal law promulgated in 2005, it will be mandatory to add 2% of biodiesel to petrodiesel until 2008 and this percentage must be increased to reach 5% until 2013.

In this frame the Group of Pollution Prevention of University of Sao Paulo is developing a project to assess biodiesel sustainability for Brazilian conditions. As the main environmental appeal for biodiesel use is concerned to greenhouse gases emissions, this paper (part of the major project) compares the greenhouse gases emissions life cycle inventory of biodiesel from soybean oil obtained by methylic and ethylic routes.

Even considering that soybean is a major source of protein than of oil, in Brazil it may be an important raw material for biodiesel production due to the fact that it is responsible by almost 90% of the whole amount of vegetal oil produced in Brazil. The yield of soybean oil production in Brazil varies between 0.2 and 0.6 ton of oil per hectare.

Nowadays, most of the biodiesel produced in the world uses methanol – a petroleum derivate – as alcoholic source; on the other side, Brazil has a well stablished know how to produce ethanol from sugar cane. It must be emphasized that the ethanol technological route for biodiesel production is not yet completely known.

The scope of the study contemplates soybean production, vegetal oil extraction, both alcohols production and biodiesel productions either by methylic and ethylic routes.

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