

Algae Biodiesel – Energy for the Future

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In the wake of higher food prices, fuels like biodiesel and ethanol have been criticized because they rely on food crops like corn and soybeans, to produce fuel. Also, their growing, harvesting and refining involve energy-intensive practices. Algae can grow almost anywhere, though they best prefer warm weathers, plenty of sunlight and a humid environment. Bio-fuel research has turned towards algae in recent years after the discovery of its ability to generate oil, which can then be turned into fuels. Like plants, microalgae use sunlight to produce oil but they do so more efficiently than crop plants. Oil productivity of many microalgae greatly exceeds that of the best producing oil crops. Better still, it's abundant on a truly enormous scale, and doesn't bring with it the issues courted by bio fuels from crops, which are accused of diverting resources needed for important food crops to fuel production. Not only can the algae be turned into bio-diesel, its remains can be used as a fertilizer or feed stock too. Algae-derived bio-fuel can reduce life cycle CO₂ emissions by 50 -70% compared to petroleum fuels, and is approaching a similar Energy Return on Investment (EROI, defined as the amount of energy input into the process of making the fuel versus the final amount of energy output from the fuel) as conventional petroleum according to a new peer-reviewed paper

Bio resource Technology. Various methods are available for the extraction of algal oil, such as mechanical extraction using hydraulic or screw, enzymatic extraction, chemical extraction through different organic solvents, Ultrasonic extraction, and supercritical extraction using carbon dioxide above its standard temperature and pressure. Of all these, the best preferred method until date is chemical extraction. It involves the repeated washing with organic solvents under reflux in special conditions. Algae-based fuels are not limited to just powering cars and trucks, they are also looked upon as potential aviation fuels, chemically mimicking traditional jet fuel. However, a lot of work still needs to be done in order to harness and commercialise the biodiesel on a large scale.

This present work aims to shed more light on the technology and its future compatibility.