

# Algal biodiesel could be the best eco-friendly fuel option of tomorrow

June 3 2021, by David Bradley

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The search for sustainable energy sources continues apace. Research highlighted in the *International Journal of Renewable Energy Technology*, looks at one such source—algae, from which biodiesel can

be derived, The work discusses production issues, characterisation, and compares the performance of such fuels with other sources of diesel.

Alpesh Virendrabhai Mehta and Nirvesh Sumanbhai Mehta of the Mechanical Engineering Department at the Government Engineering College, Gujarat, India, explain how ongoing industrialisation is increasing energy demands worldwide. This is giving rise to various interlinked problems for humanity—dwindling resources, increased pollution, and climate change. The fossil fuels on which we have relied for decades represent an entirely unsustainable and highly polluting resource.

The potential to use carbon compounds derived from sustainable sources such as crops and algae offer an energy stop-gap. Sustainable sources have the benefit of being renewable and will be required while we continue to rely on combustion for vehicles, heating, and [power production](#) at least until completely sustainable and non-polluting power sources, such as wind, solar, and tidal can be made more universally available. There is also the potential for certain approaches to biofuels that replace [fossil fuels](#) to have a smaller carbon footprint for the same power output. The use of algae rather than fuel crops would have the added benefit of not displacing food agriculture.

The team has demonstrated that algal biodiesel is less viscous than conventional [diesel](#) and so has a shorter delay before combustion in a diesel engine. A minimal chemical delay also benefits algal diesel in terms of giving the highest brake [thermal efficiency](#). The presence of oxygen in algal diesel also adds to this efficiency because the [oxygen atoms](#) act to promote combustion from "within" the fuel itself.

The team reports that algal diesel gives better performance than conventional diesel. Moreover, exhaust gas analysis of various blends satisfies the emission regulations for biodiesel in India, the team writes.

They suggest that algal diesel would be an environmentally beneficial substitute for conventional diesel.

**More information:** Alpesh Virendrabhai Mehta et al, Production, characterisation, comparison, and performance of algae biodiesel as an eco-friendly fuel, *International Journal of Renewable Energy Technology* (2021). [DOI: 10.1504/IJRET.2021.115283](https://doi.org/10.1504/IJRET.2021.115283)

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