

Finding suitable sites for large-scale algal biofuel plants

September 10 2012, by Jo Manning

(Phys.org)—Scientists have for the first time identified a number of WA sites capable of producing large quantities of commercial biofuel from microalgae.

They say the best sites for big-scale algal biofuel plants include stretches of land south of Geraldton, south-east of Exmouth and large areas near Karratha and Port Hedland.

Professor Michael Borowitzka from Murdoch University's Algae Research and Development Centre and Assistant Professor Bryan Boruff from the School of Earth and Environment at The University of Western Australia used Geographical Information Systems (GIS) technology to study more than 2250km of WA coastline from Lancelin to Broome and 170km inland.

Their report, [Identification of the Optimum Sites for Industrial-scale Microalgae Biofuel Production in WA using a GIS Model](#), was prepared for the WA Government-funded Centre for Research into Energy for Sustainable Transport (CREST) and is the first WA-wide study of its kind.

Professor Borowitzka, a leading world authority on algal [biofuel production](#), said WA had several key advantages for suitable sites: abundant sunshine, extensive land unsuitable for agriculture and plenty of water in the Indian Ocean.

"But not all of WA is ideal for such plants, so we examined sites scientifically by assessing land suitability, access to infrastructure and workforce, carbon dioxide availability – along with nutrients such as nitrogen and phosphorus – and climate," Professor Borowitzka said.

Assistant Professor Boruff added: "Commercial success depends on economically viable, large-scale production, which is why this study is so important."

Professor Borowitzka said more research and development was needed to find the most energy-efficient and economically feasible way to extract and convert algal [biomass](#) into renewable bioenergy.

Limited world [fossil fuel resources](#) and an ever-increasing [global demand](#) for energy have prompted substantial interest in renewable biofuels. Professor Borowitzka has been at the forefront of research into producing biofuels from algae.

Algal biofuels – especially liquid fuels produced from algae oils – are seen as an important component of a future clean biofuels mix, he said.

Its fast growth rate and high oil content appears to make microalgae particularly well-suited to renewable biodiesel production and offers an attractive sustainable alternative source to other compounds such as carotenoids, polyunsaturated fatty acids and polysaccharides.

WA already has the world's biggest commercial [microalgae](#) production plant at Hutt Lagoon, north of Geraldton.

Provided by Murdoch University

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