

Algae biofuel project leads world



Dr David Lewis and Dr Peter Ashman (School of Chemical Engineering, University of Adelaide) with a sample of the algae being cultivated in Adelaide. Photo courtesy of the University of Adelaide



Professor Michael Borowitzka (Murdoch University) with clean biofuel produced from algae. Photo courtesy of Murdoch University

Australian scientists are achieving the world's best production rates of oil from algae grown in open saline ponds, taking them a step closer to creating commercial quantities of clean biofuel for the future.

A joint \$3.3 million project led by Murdoch University and involving the University of Adelaide now leads world algae biofuel research after more than 12 months of consistent results at both universities.

It was previously believed impossible to grow large quantities of algae for biofuel in open ponds consistently and without contamination, but the research team has proven it can be done.

The project has received \$1.89 million funding from the Australian Government as part of the Asia-Pacific Partnership on Clean Development and Climate.

"This is the only biofuel project in Australia working simultaneously on all steps in the process of microalgal biofuels production, from microalgae culture, harvesting of the algae and extraction of oil suitable for biofuels production," said Project Leader Professor Michael Borowitzka from Murdoch University.

Due to the project's success, construction of a multi-million dollar pilot plant to test the whole process on a larger scale will now begin in Karratha in the north-west of Western Australia in January, and is expected to be operational by July.

"This is another potential growth industry and jobs generator for Western Australia and South Australia aside from mining – using our natural abundance of sunlight and year-round good climate," Professor Borowitzka said.

"We have achieved production rates of 50 tonnes per hectare per year, over half of which is converted to oil. These high production rates are expected to increase at the new pilot plant due to the even better climatic conditions in Karratha."

The first stage is costing \$1.5 million and further funding is being sought for future stages estimated to cost between \$5–10 million.

The cost of producing biofuel from algae has already dropped from \$12 a kilo to below \$4 in the past year, but the aim is to get it down to less than \$1 a kilo.

Dr David Lewis from the University of Adelaide's School of Chemical Engineering said a key aspect of the project was to show that commercial levels of algae could be grown without competing for resources with food crops.

"The algae will grow on non-arable – even arid – land without any need for freshwater in cultivation," Dr Lewis said.

"By contrast, crops such as canola need a lot of freshwater and good-quality farming land. Growing algae at an industrial scale also takes up significantly less land than that required by canola crops to produce the same amount of biofuel."

In addition to producing clean fuel, Professor Borowitzka said that during the growth of the algae, 60 tonnes of CO₂ are fixed per hectare of algae each year.

One of the project's international partners, major algae producer Parry Nutraceuticals in India, has also achieved high rates of carbon fixation.

South China University of Technology is the project's other international partner. 