Daily News & Analysis

Print This Article

Monday, July 27, 2009 8:11:00 AM

Permission to reprint or copy this article or photo must be obtained from www.3dsyndication.com.

Algae fuel grand energy dream

Bhargavi Kerur / *DNA*

Indian and Canadian scientists are on a unique experiment that could well kill two birds with one stone. They are jointly researching ways and means to use algae to generate oil to replenish the diminishing oil reserves. But in doing so, they plan to increase the algae volumes, which would cut down greenhouse gases in the atmosphere.

The project involves researchers from the Centre for Ecological Sciences (CES), Indian Institute of Science (IISc) and those from Canada-based Manitoba University.
But the first step, which CES researchers are involved in, is to identify which algae secrete more oil than the others.

This is a tough task in itself as there are more than 20,000 known algae species the world over. Simultaneously, there is a process on to develop a method to genetically manipulate the identified algae to ensure they secrete more oil than otherwise, according to TV Ramachandra, senior CES faculty member who is heading the IISc team in this venture.

The genetic manipulation would be done by the Manitoba University team, led by Richard Gordon, a senior researcher from the university's department of radiology.
At the IISc lab, the researchers are culturing the algae to identify the ones which produce maximum yield of oil, and which are sustainable. And for continuous secretion and milking of oil, Gordon has suggested genetic manipulation. "He (Gordon) hit upon the idea based on mammary glands in humans, which do not degrade, but grow. Hence the manipulation will not let the cell degrade but re-grow and continuously secrete oil for consumption," Ramachandra explained.

Algae are primitive chlorophyll-containing, mainly aquatic organisms, lacking true stems, roots and leaves, which are more popularly known as fungus. These form on pool surfaces or are found in suspension in marine environment.

The researchers plan to exploit the algae for oil as these suspended or floating plant-like structures just sink to the sea-bed and are consumed by fish.

Once on the sea-beds, they deposit oil and shells into the sediments. IISc and Manitoba researchers plan to utilise these algae in a better way by exploiting the oil, which otherwise goes waste. The added advantage is that algae produce about 10 to 200 times more oil per acre when compared to soyabean. "It takes millions of years for an oil bed to be ready, but here (with algae) we are looking at much faster secretion of oil," said Ramachandra.

The researchers are building a panel, similar to a solar panel, where the algae colonies are being developed, and where the oil would be secreted and collected. "This would produce enough oil to meet the requirement of the increasing population," Ramachandra said.

The second benefit from the algae is that they feed on carbon, thereby going through the process of photosynthesis which prevents the release of green house gases into the atmosphere. This contributes to the reduction of global warming. Algae have been used for monitoring environment conditions for several years now, including making them bloom so that they rise to the sea surface to consume more carbon dioxide from the atmosphere.

"The idea came up when Gordon visited IISc last November and we called it 'milking algae', since we extract the oil from live algae. We have reviewed the literature available for four months, and proceeded on building an effective technology for the procedure of milking the oil from the diatom (algae)," Ramachandra said. The technology would be ready in three years for use. "It has quick application value and is a viable option of alternative energy. Since it also addresses the issue of climate change, I say this is the right option," he argued.

About us | Contact us | Advertise with us | Subscription | Reprint rights

© 2005-2009 Diligent Media Corporation Ltd. All rights reserved.