



Future bright for algae crops but forget about biofuels

Marine biomass: still an Eldorado?

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Moderator : **Geoffrey O'Sullivan**, International Co-operation Manager, Irish Marine Institute

Speakers : **Jean-Paul Cadoret**, Head of the Algae Physiology and Biotechnology Laboratory, IFREMER, (Institut Français de Recherche pour l'Exploitation de la Mer), France
Jack Legrand, Head of GEPEA (Génie des Procédés – Environment – Agro-Alimentaire), Nantes University, France
Gilli Trónd, Chief Executive Officer, Ocean Rainforest, Iceland

When it comes to finding innovative uses for seaweeds and algae, forget about biofuels, the three panelists in this debate agreed. Despite a spate of recent media articles vaunting marine plants as the next big thing when it comes to alternative energy sources, the three experts said that there were far better things that could be done with 'algal biomass'. This view was particularly relevant as it comes in the wake of the 'fuel from food' furore surrounding the use of foodstuffs like corn or sugar beat to make gasoline substitutes.

Gilli Trónd, who runs a company based in the Faeroe Islands that intends to begin growing seaweed commercially, said he was getting tired of potential investors pestering him to develop biofuels. "Venture capitalists like simple ideas that they can understand. They come along to meetings having read newspaper articles about algae biofuels and they tell me I should be doing that," he said. But a quick explanation of the economics of his business showed why he was not keen to move in that direction for the time being.

"The most high-end product I can make from the seaweed I produce is agar jelly, which sells for around US\$23 a kilo. Gasoline is nowhere near that," he said. Agar jelly has a multitude of uses, such as a base for laboratory cultures, as a food additive, as well as being widely employed in the cosmetics industry. "I don't know what it's like here, but in the Faeroe Islands, a litre of milk is still more expensive than a litre of gasoline," he added.

Jean-Paul Cadoret, Head of the Algae Physiology and Biotechnology Laboratory at France's Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) argued that worrying about the end uses of algae and seaweed biomass was putting the cart before the horse. What mattered was ensuring that we extended our knowledge of a family of plants that had enormous potential in all kinds of areas. "The yield of biomass made from seaweeds and algae are much higher than those of terrestrial plants," he said.

Jack Legrand, Head of GEPEA (Génie des Procédés – Environment – Agro-Alimentaire) at Nantes University in France agreed. "In Hawaii at the moment they



can produce 50 tonnes of algal biomass per hectare per year. For wheat, the yield is less than ten tonnes," he said. "The most important thing to do at the moment is to produce the biomass," he added.

Cadorete argued that there was ample time to work out the best way to use algal biomass. There were possibilities in the food industry, there could be applications in pollution control and there was of course the biofuels option. In addition, there were all kinds of potential applications that had not been developed yet, he said.

"We are pioneering at the moment. We are at the same stage that the petrol engine was in 1900. We need at least another five years to see how the sector develops," he said. "Everything you can do with terrestrial plants you can do with algae. The day we have serious quantities of biomass, we can consider all the applications and biofuels may not be the best of those," he added.

Trónd explained that he hoped the seaweed business he was developing would respect the marine environment around the Faeroe Islands, which are in the North Sea between Scotland and Iceland. He would only grow native species of seaweed and he hoped to set up his farm in areas not already used for fishing or marine transport. Nevertheless, he explained that if a farm like the one he was planning got up and running, it could cover a considerable area.

"You would not even notice a farm of 1,000 square kilometers in the Atlantic Ocean," he said explaining that he intended to grow his seaweed along kilometer-long ropes. Producing large quantities algae nearer to the coast of the European mainland could be more complicated however, explained Cadoret, pointing out that Europe's coastal regions are already used relatively intensively by other industries. "Growing algae inside, on the land is expensive. Growing it outside is cheaper, but there are space questions," he said.

"My impression is that in Europe we will be limited in the space we can use to produce biomass and it certainly won't be an Eldorado for producing biofuels," he added. Given that Europe's production was likely to be restricted, he suggested there were far more profitable and useful things to be doing with algal biomass than, "just burning it."
