

OMAFRA-KTT Bio-Economy Seminar

BIOPRODUCTS DISCOVERY & DEVELOPMENT CENTRE (BDDC)
SEMINAR SERIES



Thursday, December 1st, 2011 at 10 – 11 am
Science Complex, Room 1511 (first floor)

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Biofuels from microalgae: the Chilean example

Abstract

The advantages of using microalgae for biodiesel production include high growth rates, adaptability to saline conditions and nutrient up-take from treated wastewater, the use of CO₂ from energy plant flue gases, as well as the potential production of high value co-products. With the support of the Chilean Government the project consortium Desert Bioenergy S.A. was formed with the main objective to develop a process for biodiesel and other products from microalgae. This consortium consists of several research institutions and industry including Universidad de Antofagasta, Universidad de La Frontera, Electroandina S.A., Prodalmar Ltda. And Molinera Gorbea Ltda. The consortium Desert Bioenergy selected several species of microalgae, including *B. Braunii*, which is widespread in fresh and brackish waters of all continents and known to produce higher amounts of hydrocarbons (20–86% on dry weight) and lipids (15-42%). The byproducts of *B. braunii* include carotenoids, antioxidants, fatty acids, bioactive molecules, and exopolysaccharides. Within Desert Bioenergy, an industrial plant will be installed in the North of Chile, building upon the advantages of high solar intensity (4.828 kcal/m² day), large availability of desert land unsuitable for other agricultural activities (126.049 km²), and the availability of CO₂ from existing energy production plants for the mining industry.

Short CV

Professor Rodrigo Navia earned his Chemical Engineering degree from the Technical University Federico Santa María, Valparaíso, Chile. He obtained his Ph.D. in Mining Sciences from the University of Leoben, Austria. His research interests include waste to energy and resource technologies, bioenergy, biorefinery concepts and bioremediation processes. He has been involved as principal researcher in several R&D projects, particularly in topics focusing on biodiesel, biogas, biomass to energy, biochar and fly ashes valorization. In addition, he serves as an Associate Editor of Waste Management & Research, the ISI scientific journal of ISWA, the International Solid Waste Association. Moreover, he has been serving as a reviewer for more than 10 ISI scientific journals including Environmental Science & Technology, Bioresource Technology, Energy & Fuels and Chemical Engineering Journal. Professor Navia was invited visiting professor at Universities in Austria, Brazil, Germany, Spain and Sweden. He is currently a full professor in the Department of Chemical Engineering and Director of Innovation and Technology Transfer at the University of La Frontera, Temuco, Chile.

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