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Algae based biofuel: A myth or a reality!

High oil prices and the fact that traditional fossil fuels such as gasoline create dangerous greenhouse gases have sparked international interest to search for new biofuels from renewable resources. Because of high lipid content, microalgae have attracted tremendous attention to researchers. As algae are well known to adapt to nutrient stress, number of factors are likely influence the lipid content of microalgae, such as nitrogen and silicon deficiency, phosphate limitation, high salinity and photochemical efficiency to harvest solar energy by the algae. Department of Energy already recognized the potential of algae as feedstock for biofuel back in the 1970s. In 1996, although DOE shut down the program, concluding that the algal biofuels could not compete with the fossil fuel in cost, subsequently the initiatives were revived. Years of intensive research on microalgae have revealed amazing potential for biofuel production, algal technologies for biofuel production are widely debated and large scale algal biofuel production appear currently unsustainable. Even with all the economic disadvantages, it is hard to overlook algae's potential for further research. Algae are incredibly easy to grow and grow quickly and have high oil content. Algae yield more oil than other bio feed stocks and produces up to 30 times more oil per unit of land compared to oil seed crops like palm and soy. For example, *Botryococcus barunii* have high oil yields 29-75% dry weight and the lipid content is influenced by nutrient stress. Algae thrive on a high concentration of carbon dioxide and nitrogen oxide and using algae of reducing the CO2 in the atmosphere is known as algae-based carbon capture technology. Algae are an excellent absorber of greenhouse gas, CO2; each ton of algae absorbs two tons of CO2 from the air. While harvested algae, like fossil fuels, release greenhouse gases when burned, the difference is that the algae actually remove CO2 from the air as they grow, functionally algae is a carbon-neutral biofuel. They can grow in arid and semi-arid areas, so as not to compete with food crops for land. During algal bloom, algae may cause mortality of other organisms; algae in general contribute to the economic wellbeing in the form of food, medicine and other valuable products and neutraceuticals. The key note address will be the assessment of current status of algal research especially the research on biofuels.

Biography

C. R. Nair is the Director of Environmental Science Programs /Associate Professor of Chemistry and is the Project Leader of Bioremediation Research supported by the Department of Energy at Paine College, Augusta, GA. He earned his PhD in 1970 from the University of Allahabad (India) and did postdoctoral research at Vanderbilt University School of Medicine, Nashville, Tennessee (USA) and served Research Professor at LSU School of Medicine, NOLA (USA). He is licensed as High Complexity Laboratory Director (AAB). He was honored as Fellow of the American Institute of Chemists, Fellow of the national Academy of Clinical Biochemistry and Fellow of the American College of Nutrition and Fellow of the London Chemical Society. He has over 45 research publications in peer reviewed journals, held several senior positions and served in various capacities in academia and industry for the past three decades.

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