Key issues to consider in microalgae based biodiesel production

All nations have been confronted with the energy crisis due to depletion of finite fossil fuels reserves, which results in an increasing global demand of biofuels for energy security, economic stability and reduction in climate change effects, and generate the opportunity to explore new biomass sources. The production of sustainable bioenergy is a challenging task in the promotion of biofuels for replacing the fossil based fuels to mitigate challenges of fossil based energy consumption. Algae might be a very promising source of biomass in this context as it sequesters a significant quantity of carbon from atmosphere and industrial gases and is also very efficient in utilizing the nutrients from industrial effluents and municipal wastewater. If developed sustainably, the algae biofuel industry may be able to provide large quantities of biofuels with potentially minimal environmental impacts. However, in order to realize this, a complete analysis of full life cycle impact of algal biofuel production in the context of issues such as water resource management, land use impact, energy balance and air emissions are very necessary. The commercial-scale production of algae requires careful consideration of many issues that can be broadly categorized into four main areas: selecting algae species that produce high oil levels and grow well in specified environments, algae growth methods, water sources and related issues, and nutrient and growth inputs.

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