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Microalgal perspectives for biodiesel production

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Microalgal biodiesel production has gained renewed interest during the last few years, and several species are screened for their cellular lipid content. Our experiences demonstrated that in microalgae cellular lipid content of more than 50% of dry cell weight (dcw) could be achieved by optimizing various critical factors influencing lipid accumulation in microalgae with the help of response surface methodology, a commonly used statistical method in various field of research. Among various factors influencing microalgal biodiesel production, requirement of huge water resources and the media nutrients are major bottlenecks for microalgae mass cultivation. As algae can successfully be grown in various wastewaters, one of the strategies could be to couple biodiesel production with wastewater treatment.

At Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, West Bengal, India, we have developed a Recirculatory Aquaculture System using fish pond discharge for algae mass cultivation and simultaneously treating the wastewater for reuse. Poultry litter supplementation was also emerged as an excellent media supplement for increasing biomass vis-à-vis lipid yield. With the green microalga *Scenedesmus obliquus* lipid productivity of 14,000 liters ha⁻¹ year⁻¹ (approx.) has been projected, which is more than twice the productivity of oil palm, the highest oil producer among energy crops.

Biography

Nirupama Mallick holds the position of professor in Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India. She is an algal biotechnologist, and working on various aspects of algae and cyanobacteria for more than two decades. She is also an Alexander von Humboldt Fellow. She has contributed well over 80 research papers in various scientific journals of international repute, and several book chapters related to various aspects of algal and cyanobacterial physiology, biochemistry and biotechnology.

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