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Bioenergy Research: Integrative Solution for Existing Roadblock

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Contents

Algal Biomass: Potential Renewable Feedstock for Bioenergy Production

5

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Abstract

The rising need for energy due to the increase in the population and its desire for higher living standards has emerged as one of the major problems for scientists. In the past few years, the diversification of bioenergy sources isn't able to come up to the commercialization step; this has emerged as an important energy issue. The researches based on third-generation bioenergy production from algal biomass have emerged as the most potential resource among all the resources that minimize the drawbacks of the first- and second-generation bioenergy. Algal biomass is considered for the economic production of bioenergy like bioethanol, biodiesel, biohydrogen, biogas, and other co-products. This potential of algae is due to its high growth rate, CO_2 utilization, less greenhouse gas (GHG) emission, and ability to store a high amount of carbohydrates and lipids. In this chapter, we will study the importance of algal biomass in terms of improved bioenergy production. This chapter discusses different recent development and findings for high algae cultivation with enhanced cell content especially lipids, various harvesting techniques, oil extraction methods, and algal oil to bioenergy conversion techniques.

Keywords

Bioenergy · Algal biomass · Bioethanol · Biodiesel · Biohydrogen · Biogas · Greenhouse gas · Oil extraction

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