

Clean Energy Production Technologies  
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Manish Srivastava  
Neha Srivastava  
Rajeev Singh *Editors*

# Bioenergy Research: Integrative Solution for Existing Roadblock

 Springer

*Editors*

Manish Srivastava  
Department of Chemical Engineering  
and Technology  
IIT (BHU) Varanasi  
Varanasi, Uttar Pradesh, India

Neha Srivastava  
Department of Chemical Engineering  
and Technology  
IIT (BHU) Varanasi  
Varanasi, Uttar Pradesh, India

Rajeev Singh  
Department of Environmental Studies,  
Satyawati College  
University of Delhi  
Delhi, India

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# Algal Biomass: Potential Renewable Feedstock for Bioenergy Production

# 5

Alvina Farooqui, Gyanendra Tripathi, Kahkashan Moheet, Priyanka Dubey, Suhail Ahmad, Arbab Husain, Adeeba Shamim, and Sadaf Mahfooz

## 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<sub>2</sub> 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

A. Farooqui (✉) · G. Tripathi · K. Moheet · P. Dubey · S. Ahmad  
Department of Bioengineering, Integral University, Lucknow, Uttar Pradesh, India  
e-mail: [alvina@iul.ac.in](mailto:alvina@iul.ac.in)

A. Husain · A. Shamim · S. Mahfooz  
Department of Bioscience, Integral University, Lucknow, Uttar Pradesh, India

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