

RECENT ADVANCES IN BIOENVIRONMENTAL ENGINEERING

■ Suleyman A. Muyibi ■ Maan Alkhatib ■
Mohd Ismail Abdulkarim ■ Md Zahangir Alam
Hamzah Mohd Salleh ■ Mohammed Saedi Jami

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Editors

Suleyman A. Muyibi

Mohd Ismail Abdulkarim

Hamzah Mohd Salleh

Maan Alkhatib

Md Zahangir Alam

Mohammed Saedi Jami



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CHAPTER 4

Production of Selected Hydrolytic Enzymes from Agro-residues

Hamzah Mohd. Salleh, Md. Zahangir Alam and Aliyu Salihu

Bioenvironmental Engineering Research Unit (BERU) Faculty of Engineering, International Islamic University Malaysia, P.O.Box 10, 50728 Kuala Lumpur, Malaysia

Introduction

Agricultural residues encompass all plant and animal based residues as well as processing residues generated from the harvested portions of crops during food, feed, and fiber production. These residues are produced in large quantities in several parts of the world. Thus, agricultural and agro-industrial activities produce thousands of tons of by-products, such as cakes, bagasse, straw, pulp, husk, cobs, stalks, brans, grass silage, among others (Graminha, *et al.*, 2008). These cheaply available raw materials are mostly left in the field, or disposed of through incineration and land filling. This contributes to environmental pollution and resource depletion (Pandey, *et al.*, 1999). The awareness among lawmakers and industry players of the need for sustainable development in terms of wisely and safely reusing agricultural residues, the transformation of agro-residues to valuable materials and energy is emerging as a popular and beneficial trend.

One of the current efforts in valorization of these residues is in the production of hydrolytic enzymes. Cheaply available agro-residues are important raw materials for hydrolytic enzymes production since their residual nutritional compositions can serve as carbon, nitrogen and inducer sources for several enzyme systems. For example, organic residues with high protein contents favor the production of proteases (Singh and Chhatpar,