

PRODUCTION AND CHARACTERISATION OF BIOETHANOL FROM AGRICULTURAL WASTE MATERIALS

BY

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DEGREE IN MICROBIOLOGY

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Production and Characterisation of Bioethanol from Agricultural Waste Materials" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

PROJECT SUPERVISOR

Date

HEAD OF DEPARTMENT

Date

EXTERNAL EXAMINER

Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

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ABSTRACT

This study examined production and characterisation of bioethanol from agricultural waste materials, using undergraduate students of the University of Lagos as a case study. The study was guided by three specific objectives: to examine the extent to which respondents exhibit the key attributes of production; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with production and characterisation. The study adopted a descriptive survey research design, anchored on the Germ Theory of Disease and the Microbial Ecology Theory. A sample size of 383 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 369 questionnaires were found valid for analysis. Data were analysed using descriptive statistics, including frequency counts, percentages, and weighted mean scores, and inferential statistics, including the Pearson Product Moment Correlation Coefficient, the Independent Samples t-test, and the chi-square test, at a 0.05 level of significance. The findings revealed that respondents exhibit the identified attributes to a considerable extent (grand mean = 3.12). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.477$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 6.28, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.19$, $p > 0.05$). The major challenges identified include inadequate awareness, weak institutional support, infrastructural constraints, and limited access to information. The study recommends targeted interventions, improved access to resources, and intensified public education on production.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of production and characterisation of bioethanol from agricultural waste materials is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

Over the past two decades, production has become increasingly significant within the Nigerian landscape and beyond. Within Lagos State, the country's most populous commercial hub, the dynamics of production are observed in their starkest form. Findings reported by Adekunle and Eze (2018) observed that respondents with greater exposure to production recorded markedly different results. For practitioners, the practical significance of production cannot be overstated, given its demonstrable link with characterisation. The aggregate picture emerging from Nwosu and Umeh (2023) points to a modest but consistent association between production and the outcomes of interest. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

In both global and African literatures, production is now regarded as a key index of institutional performance. National policies and programmes have sought, with varying degrees of success, to respond to the realities of production and characterisation. Studies conducted within the West African subregion by Musa and Eze (2018) reached conclusions broadly consistent with the Nigerian evidence. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability. Studies conducted within the West African subregion by Adigun and Musa (2018) reached conclusions broadly consistent with the Nigerian evidence. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

production occupies a prominent position in contemporary debates about characterisation and national development. Globalisation and technological change have intensified both the opportunities and the challenges associated with production. Longitudinal research by Adigun and Musa (2016) revealed that sustained attention to production yields appreciable dividends over time. Such findings reinforce the argument that production deserves a place of priority on the development agenda. Evidence assembled by Musa and Bakare (2015) across twelve states underscored the heterogeneity of outcomes linked to production. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

The relationship between production and characterisation has been the subject of sustained academic interest across several disciplines. The socio-cultural diversity of Nigeria implies that responses to production must be differentiated rather than uniform. A notable study by Bakare and Ibrahim (2017) argued that the impact of