



ADAMAWA STATE UNIVERSITY JOURNAL OF SCIENTIFIC RESEARCH (ADSUJSR)

VOLUME 12 ISSUE 2, 2024 ISSN: 2705-1900 (Online); ISSN:2251-0702 (Print)

A Publication of

FACULTY OF SCIENCE

ADAMAWA STATE UNIVERSITY (ADSU), MUBI

P.M.B 25 Mubi, Adamawa state Nigeria. E-Mail: adsujsr@adsu.edu.ng Website: adsujsr.adsu.edu.ng; www.adsu.edu.ng Phone: +234 (0) 8036627553

EDITORIAL POLICY

Originality

Adamawa State University Journal of Scientific Research (ADSUJSR) is a journal for publication of original research articles, reviews, communications and letters from interested scholars and researchers in the academic community, international agencies, groups, individuals, institutions and other establishments concerning scientific approaches to sustainable development. Manuscript are critically reviewed and published twice a year. Articles not previously or simultaneously published in any other scientific or technical journal, written in English language but not limited to the following areas of research are considered for publication:

- ✤ Agricultural Sciences
- Biological Sciences
- Computer Sciences
- Environmental Sciences
- ✤ Mathematical Sciences
- Medical Sciences
- Physical Sciences
- ✤ Science Education and Technology.

Philosophy

In any knowledge-based system, the currency of exchange is information **"To gauge the research temper of African people".**

Copyright©2011-2023 adsujsr.adsu.edu.ng

Submission of article for publication implies the transfer of the copyright from author(s) to the publisher upon acceptance. Accepted papers become the permanent property of the "Adamawa State University Journal of Scientific Research" and may not be reproduced by any means without the written consent of the Managing Editor or Chief Editor.

Disclaimer

The published articles contain the statements and opinions of the individual contributors and not those of ADSUJSR. The Journal Management disclaims all duty and responsibility for any harm or damage to people or property resulting from the use of any of the ideas, instructions, methods, or materials it provides in this publication. Any implicit assurances of merchantability or fitness for a particular purpose are specifically disclaimed by the Journal Management. When seeking expert guidance, it is advisable to use the services of a qualified specialist.

Owner

Faculty of Science, Adamawa State University (ADSU) Mubi.

EDITORIAL BOARD

Chief Editor

Prof. Solomon A. Mamuru, FCSN Professor of Physical Chemistry Department of Pure and Applied Chemistry Adamawa State University, Mubi, Nigeria.

Editorial Consultants

Prof. Ambrose. A. Zemba *Professor* of Climatology & GIS/Remote Sensing Department of Geography Modibbo Adama University, Yola, Nigeria.

Prof. Fabian Ezema

Professor of Solar and Material Science Department of Physics and Astronomy University of Nigeria, Nsukka, Nigeria

Prof. Esther Adelakun

Professor of `Organic Chemistry Department of Pure and Industrial Chemistry University of Jos, Nigeria.

Editors

Prof. Ismaila Y. Sudi *Professor* of Environmental Biochemistry Department of Biochemistry Adamawa State University, Mubi, Nigeria

Prof. Clement Chub

Professor of Environmental Resources Management Department of Geography and Environmental Management University of Abuja, Nigeria.

Prof. Simon Kasidi Professor of Geophysics Department of Geology Adamawa State University, Mubi, Nigeria

Prof. Alfred I. Onen

Professor of Physical Chemistry Department of Chemical Sciences Federal University, Wukari, Nigeria.

Prof. Augustine U. Okoronka

Professor of Physics Education (Science Education) Department of Science Education Modibbo Adama University, Yola, Nigeria.

Editorial Correspondent Prof. Ezekiel Yonnana

Professor of Geography (Geomorphology and Water Resources Management) (Chairman ADSUJSR/Holding Editor) Department of Geography Adamawa State University, Mubi, Nigeria. Mobile: +234 (0)8036627553

Prof. Abaje Lateef

Professor of Microbiology Department of Pure and Applied Biology Ladoke Akintola University of Technology,

Prof. Israel Olayemi

Professor of Medical Entomology Department of Zoology Federal University of Technology, Minna, Nigeria.

Prof. Garba Shuaibu

Professor of Mathematics Education Department of Science and Technology Education Bayero University Kano, Nigeria.

Prof. Peter M. Jonah

Professor of Plant Breeding and Genetics Department of Crop Science Adamawa State University, Mubi, Nigeria.

Prof. Augustine Clement

Professor of Animal Science (Monogastric Animal Nutrition) Department of Animal Production Adamawa State University, Mubi, Nigeria.

Prof. Peter Sunday Zirra

Professor of Computer Science and Internet Security Department of Computer Science Federal University, Kashere. Nigeria.

Prof. Dale W. Medugu

Professor of Renewable Energy and Electronics Department of Pure and Applied Physics Adamawa State University, Mubi, Nigeria

Prof. Yusuf Skwame

Professor of Numerical Analysis Department of Mathematics Adamawa State University, Mubi, Nigeria

GUIDE FOR AUTHORS

Originality

ADSU Journal of Scientific Research is a journal for publication of original research articles from interested scholars and researchers in the academic community, international agencies, groups, individuals, institutions and other establishments concerning scientific approaches to sustainable development. Manuscript are critically reviewed and published annually. Articles not previously or simultaneously published in any other scientific or technical journal, written in English or French language but not limited to the following areas of research are considered for publication.

- Agricultural Sciences
- ✤ Biological Sciences
- Computer Sciences
- Environmental Sciences
- Mathematical Sciences
- Medical Sciences
- Physical Sciences
- Science Education and Technology.

Copyright

Submission of article for publication implies the transfer of the copyright from author(s) to the publisher upon acceptance. Accepted papers become the permanent property of the "Adamawa State University Journal of Scientific Research" and may not be reproduced by any means without the written consent of the Managing Editor or Chief Editor.

Typescript

- The authors are responsible for preparing manuscript(s) clearly written in scholarly acceptable English language with no spelling, grammatical or punctuation errors.
- All manuscripts must be typewritten, font size 12, double spaced on A4 paper with margins on both sides, not exceeding twelve (12) pages, abstract and references inclusive. Receipts of paper will be acknowledged. Authors will be informed of the referees' report and rejected papers will be returned to the authors.
- The manuscripts are reviewed on the understanding that they are original and unpublished works of authors and are not considered for publication elsewhere.
- The Editorial board reserves the right to accept or reject manuscript(s) where it/they fail to meet the international standard/requirement and such decision is final.

Manuscript Categories

- (i). Original Research (maximum: 12 pages, 50 references)
- (ii). Short Communication/Letter (maximum: 8 pages, 25 references)
- (iii). Review (maximum: 40 pages, 90 references)

Manuscript Preparation

Title Section

The title section should contain the Title of the Article which should not be more than 20 words; Names of the author(s) and Contact address(es); mobile phone number(s) and e-mail address(es) of the corresponding author.

The title of the article should convey the topic of the research. Avoid words that add little to the meaningfulness of the article. E.g. "an empirical study of ...", "A field study of ..." etc, such words make the title too lengthy.

Abstract

The abstract should not exceed two hundred (200) words. Should be written in simple language, clear and concise and should contain the aim(s) of the study, methodology, main ideas of the discussion, research findings and conclusion. Abbreviations should be avoided and if used, should be explained at least once.

Keywords

A minimum of five (5) and maximum of six (6) keywords must be given at the end of the abstract.

Introduction

This should provide a general context for the work, explaining its significance and indicating why it should be of interest to scientist of other areas. Literature cited must be discussed to show the relationship between published work(s) and the research study.

Materials and methods

Previously described methods should be cited and not elaborated upon. Details should be referred to literature cited. New approaches or methodologies should receive detailed attention. Statistical methods of treatment should be mention if used.

Results and Discussion

Results and Discussions should be combined. The original and important findings should be stated. Results should be illustrated with figures or tables where necessary but these should be kept to the minimum. The discussion should be highlight what is new in the research.

Conclusion

It should summarize the major findings that could be drawn, pointing out their significance and alluding possible future directions.

Acknowledgements

These should be presented at the end of the text and before the references. Technical assistance, financial assistance and advice may be acknowledged.

References

References should follow the current APA format. All references must have in-text citations and all in-text citations must reflect in the references. The references must be typed separately and inserted at the end of each article.

Tables

Tables should be typed numbers consecutively with Arabic numerals (e.g. Table 1, Table 2 etc). They should be clearly shown and placed at the appropriate position(s) marked in the article.

Figures

Figures should be numbered consecutively with Arabic numerals (e.g. Fig. 1, Fig. 2 etc). Graphs should preferably be drawn using appropriate computer software and presented on single page ready to mount. These should be constructed in a manner that they understood without reading the text. All figures should be placed at the appropriate position(s) marked in the article.

Appropriate symbols should be used on graphs and explained in the legends. Graphs should not duplicate results presented in the tables. Photographs should be produced in black and white. Titles and comments of the figures and photographs should be provided on a separate page using MS word.

Units and Symbols

SI units should be used for physical quantities. Symbols, units and nomenclatures should conform to the recommendations of International Union of Pure and Applied Chemistry (IUPAC).

Manuscript Submission

Manuscripts should be submitted electronic copy alone (e-mail) to the above address for publication.

Publication Charges

Assessment fees: Six Thousand Naira (N6, 000.00) only

Publication fees: Fifteen Thousand Naira (**N15, 000.00**) only These amounts cover only the electronic (PDF) as obtained from the website.

Payment should be made directly into our designated account and bank as detailed below:

Account Name: Adamawa State University Journal of Scientific Research (ADSUJSR) Account Number: 1014611204 Bank: Zenith Bank Plc

Note: You can view your published manuscript at <u>adsujsr.ads.edu.ng</u> Ten (10) days after publication. For online submission, address to <u>adsujsr@adsu.edu.ng</u> For more information visit our website; <u>adsujsr.adsu.edu.ng</u> or <u>www.adsu.edu.ng</u>.

TABLE OF CONTENTS

Title page Editorial Policy Editorial Board Guide to Authors Table of Contents	Ii Iii Iv V Viii
Physiological and Antioxidative Responses of Feedlot Bulls Fattened during the Hot Period of Dry Season in Mubi, Adamawa State, Nigeria Abbaya, H. Y., Richard, G., Augustine, C., Babale, D. M., Millam, J. J., Lumbonyi, I. A., & Malgwi, I. H.	1 – 9
Sibling Cannibalism of African Catfish (<i>Clarias gariepinus</i>);(<i>Burchell, 1822</i>) Fingerlings Cultured Under Different Photoperiod Conditions Apollos T. G, & Edward A.	10 - 15
Assessment of Heavy Metals in Water, Fish (<i>Clarias gariepinus</i>) and Sediments of Kiri Reservoir, Adamawa State, Nigeria Edward, A. & Duwal, S.D.	16 - 21
Evaluation of the Basic Science Curriculum at Basic Education in the North East, Nigeria Kamkwis, Markus Zira, Felix Nupam Nzonzo, Kamkwis, Rhoda Markus, Kabiru, Usman & Audu, Jibril Mallam	22 - 30
Effects of Variety and Plant Growth Regulators on the Growth and Yield of Some Maize (<i>Zea mays l.</i>) Varieties in Yola Adamawa State Nigeria Kwambowa, P. 1. and Babayola, M.	31 – 46
Comparative Incidences of Gastrointestinal Parasite in Clarias Gariepinus and Oreochromis niloticus, from Biu Dam, Borno State, Nigeria Baban Tanko F.S., Zira, J.D., Isa, K.M., Muhammad, H.U & Binta, B.I	47 – 54
Influence of Plant Growth Regulators on the Performance of Vegetable Amaranth (Amaranthus caudatus L.) in Mubi, Northern Guinea Savannah, Adamawa State Nigeria Njobdi, M. & Babayola, M.	55 - 60
Length-Weight Relationship and Condition Factors of the African Silver Catfish (<i>Chrysichthys nigrodigitatus</i>) from Freshwater and Brackish Water in Nigeria Duwal, S. D. & Edward, A.	61 - 68
Assessment of the Level of Heavy Metals in Soil and Vegetables in Irrigation Farming Sites in New- Bussa and its Environment, Niger State, Nigeria Olaifa, O.P., Akande, O.A., Yusuf, I.O., Zubairu, M.A. Iluyemi, C.A., & Meduna, P.N.	69 – 76
Efficacy of some Selected Plant Products on the Storability Control of Cowpea Bruchid (<i>Callosobruchus maculatus L. Walp</i>) in North Eastern Nigeria Madugu, A. J., Clement, A., Ahmed, & Oaya, C. S	77 – 84
Climate Change Adaptation: An Examination of the Effectiveness of Indigenous Knowledge Systems among Rural Farmers in Akpanya Community, Kogi State, Nigeria Audu Liberty Oseni	85 – 90

Impact of Aggregate Stability on Plant Available Moisture Content in Bauchi State Ekle, A.E., Babaji, G.A., Hassan, A.M., Voncir, N., Abdusalam, R.A., Katkuk, A., E Stephen, B. & Yusuf, Z.E.	91 – 98
Efficacy of Nanoparticles and Silver Nitrate in the Control of Fusarium Wilt of Tomato (<i>Solanum lycopersicum L.</i>) Iluyemi, A.C., Afolabi, C. G., Idehen, E.O., Popoola, A. R., Akande, O.A.& Olaifa, O.P.	99 – 105
Comparative Analysis of Moisture Characteristics of Soils Derived from Sandstone Parent Material in Darazo and Alkaleri Areas of Bauchi State, Nigeria Ekle, A.E., Babaji, G.A., Hassan, A.M., Voncir, N., Abdusalam, R.A., Katkuk, A., E Stephen, B. & Yusuf, Z.E.	106 - 115
Comparative Analysis of Soil Moisture Characteristics between Soils Derived from Basement Complex and Sandstone Parent Materials in Parts of Bauchi State. Nigeria Ekle, A.E., Babaji, G.A., Hassan, A.M., Voncir, N., Abdusalam, R.A., Katkuk, A., E Stephen, B. & Yusuf, Z.E.	116 - 125
Evaluation in the Science Laboratory and Mathematics Classroom in Nigeria Deborah T. A. Obafemi & O. A. Morah	126 - 131
Effect of Maple Software and Geoboard on Students' Performance and Retention in Geometry in Obio/Akpor Local Government Area, Rivers State, Nigeria Ini U. Ifon1, & Deborah T. A. Obafemi	132 - 142
Comparative Analysis of Different Leave Powders on Root Knot Nematode Meloidogyne incognita Affecting Bambara Groundnut in Adamawa State Tame, V.T., Bamsida, Z., & Aji M. B.	143 – 160
In-Vitro Anthelminthic Effects of Vernonia amygdalina Leaf Ethanolic and Aqueous Extracts on Earthworms (Pheritima posthuma) Abdullahi Abubakar Biu, Wasagwa John, ThankGod Emmanuel Onyiche1 & Falmata Mustapha Abdallah	161 – 165
Comparative Growth Performances of First and Second Filial Generations of <i>Clarias gariepinus</i> (<i>Burchell, 1822</i>) Fed with Processed Azanza garkeana Pulp Meal Bello, H. A-, Sogbesan, A. O., Duwal, S. D., Peter, M. B. & Onyia, L. U.	166 - 171
Exploring the Influence of Street Network on Commute Well-Being in Abuja City, Nigeria Nuhu H. Tini	172 – 179
Evaluation of the Effects of Various Organic Wastes in the Reduction of Heavy Metals in a Polluted Soil Undergoing Bioremediation Muhammad, R. G., Machido, D. A., Mohammed L. I., Ado, S. A., Atta.H. I., Hamzat A., Auta Y.I,	180 – 194
Prevalence of Schistosomiasis among Apparently Healthy School Age Children in Adamawa State, Nigeria Hamawa, S. S., Yahaya M., Oniye, S. J., Luka, S. A. & Ajanusi4 S.O, Filgona J	195 – 203
Optimal Control Model for the Dynamics of Tuberculosis with Control Strategies Njida James Andest & Ibrahim Isa Adamu	204 - 218

The Environmental Impact of Gully Erosion and Its Implications for Soil Loss in Northern Adamawa	
State, Nigeria	
Ezekiel Alhassaan, Ibrahim Saidu, Alfred D. Mshelia & Yohanna Peter	219 - 225
Stability Analysis of Mathematical Madel on the Dynamics of Typersylasis	
Stability Analysis of Mathematical Model on the Dynamics of Tuberculosis	
Njida James Andest & Samuel Musa	226 - 248