

Technoscience

Journal for Community Development in Africa



Vol. 4 2025

ISSN 2659-0573



*A Joint Publication of the Faculties of Agriculture,
Engineering and Technology, Pure and Applied
Sciences, and Information and Communication
Technology, Kwara State University*



KWASU PRESS AND PUBLISHING

Technoscience Journal for Community Development in Africa

Volume 4

2025

Chairman

Abdul Kabir Hussain Solihu

Centre for Research and Development, Kwara State University, Malete, Nigeria

Editor

Olayinka Jelili Yusuf

Faculty of Agriculture, Kwara State University, Malete, Nigeria

Associate Editors

James Adebayo Ojo

Faculty of Agriculture, Kwara State University, Malete, Nigeria

Sefiu Adekunle Bello

Faculty of Engineering and Technology, Kwara State University, Malete, Nigeria

Jumoke Falilat Ajaو

Faculty of Information and Communication Technology, Kwara State University, Malete, Nigeria

Emmanuel Anyachukwu Irondi

Faculty of Pure and Applied Sciences, Kwara State University, Malete, Nigeria

Editorial Board

A. A. AbdulRaheem, *Kwara State University, Nigeria*

Edem Bankas, *University for Development Studies, Ghana*

Emmanuel Imoloame, *Kwara State University, Nigeria*

Graham Thomas, *Texas Southern University, USA*

J. O. Atteh, *University of Ilorin, Nigeria*

James A. Adegoke, *University of Ibadan, Nigeria*

Lucky Anetor, *University of Houston, USA*

M. M. Muraya, *Institute of Plant Genetics & Crop Research, Germany*

M. O. Oyewola, *University of Ibadan, Nigeria*

Montaz Ali, *University of Witwatersrand, South Africa*

S. A. Salau, *Kwara State University, Nigeria*

Wasiu Awoyale, *Kwara State University, Nigeria*

Advisory Board

A. J. Afolayan, *University of Fort Hare, South Africa*

Christopher Bode Odetunde, *Augustine University, Nigeria*

Edward E. Osakue, *Texas Southern University, USA*

O. O. Fapojuwo, *Kwara State University, Nigeria*

Otunola Adedayo, *Kwara State University, Nigeria*

S. O. Olabiyisi, *Ladoke Akintola University of Technology, Nigeria*

Technoscience Journal for Community Development in Africa is a peer-reviewed, biannual journal jointly published by the Faculties of Agriculture, Engineering and Technology, Pure and Applied Sciences, and Information and Communication Technology at Kwara State University. The Journal publishes original, scientific and problem-oriented collaborative research in Science and Engineering aimed towards community development in any part of Africa.

ISSN 2659-0573

List of Reviewers for Technoscience Journal of Community Development in Africa, Volume 4, 2025.

Dr. Nafiu Bala Sanda, *Department of Crop Protection, Bayero University, Kano, Nigeria*

Dr. Mobolade Dele Akinbuluma, *Department of Evolutionary and Population Biology, University of Amsterdam, The Netherlands*

Dr. Abou Togola, *Maize Entomologist for Africa Global Maize Program, International Maize and Wheat Improvement Center (CIMMYT), Nairobi, Kenya*

Prof. Titilayo E. Sangoyomi, *Department of Crop Production, Kwara State University, Malete, Nigeria*

Prof. Taiye Hussein Aliyu, *Department of Crop Protection, University of Ilorin, Nigeria*

Dr. Tolulope Ewekeye, *Department of Botany, Lagos State University, Nigeria*

Dr. Philip Olukayode Olatunji, *Department of Crop Science, University of Ilesa, Ilesa, Osun State, Nigeria*

Dr. Eunice Y. Thomas, *Department of Soil Resources Management, University of Ibadan, Nigeria*

Dr. Olugbemi Y. Oke, *Department of Crop Science, University of Ilesa, Ilesa, Osun State, Nigeria*

Dr. Ade Isaac Afe, *Department of Crop Production, Kwara State University, Malete, Nigeria*

Dr. Kabir Kayode Adebayo, *Department of Crop Production, Kwara State University, Malete, Nigeria*

Prof. Oladejo G. Kolawole, *Department of Agronomy, Ladoke Akintola University of Technology, Ogbomosho, Nigeria*

Prof. Adeniyi Adebawale Soretire, *Department of Soil Science and Land Management, Federal University of Agriculture, Abeokuta, Nigeria*

Prof. Suara Oshunsanya, *Department of Soil Resources Management, Faculty of Agriculture, University of Ibadan, Nigeria*

Dr. Oluwasegun Michael Adesina, *Department of Animal Production, Kwara State University, Malete, Nigeria*

Dr. Olayinka Abosede Ojo, *Department of Animal Production, Kwara State University, Malete, Nigeria*

Dr. Ronke Seyi Babatunde, *Department of Computer Science, Kwara State University, Malete, Nigeria*

Dr. Nofiu Babatunde Nofiu, *Department of Agricultural Economics and Extension Services, Kwara State University, Malete, Nigeria*

Prof. Abdulrasak Kannike Musa, *Department of Crop Protection, University of Ilorin, Nigeria*

Dr. Abubakar Adeoye, *Department of Zoology, Kwara State University, Malete, Nigeria*

Prof. Dupe O. Ogunbosoye, *Department of Animal Production, Kwara State University, Malete, Nigeria*

Dr. Akeem Raji, *Department of Food Science and Technology, Kwara State University, Malete, Nigeria*

Prof. Adebayo Abayomi Olowoake, *Department of Crop Production, Kwara State University, Malete, Nigeria*

Dr. Philip Olukayode Olatunji, *Department of Crop Science, University of Ilesa, Ilesa, Osun State, Nigeria*

Dr. Eunice Y. Thomas, *Department of Soil Resources Management, University of Ibadan, Nigeria*

Dr. Felicia Motunrayo Olooto, *Department of Agricultural Economics and Extension Services, Kwara State University, Malete, Nigeria*

Prof Ibrahim Dauda Muhammad, *Department of Mechanical Engineering, University of Abuja*

Dr Wasiu Awoyale, *Department of Food Science and Technology, Faculty of Agriculture Kwara State University, Malete*

Dr Akeem Akinwekomi, *Department of Materials and Metallurgical Engineering, Federal University of Technology, Akure*

Dr Funsho Olaitan Kolawole, *Department of Materials and Metallurgical Engineering, University of Sao Paulo, Brazil*

Dr Tunji Owoseni, *Department of Mechanical Engineering, Kwara State University, Malete*

Dr Funsho Olaitan Kolawole, *Department of Materials and Metallurgical Engineering, University of Sao Paulo, Brazil*

Dr Morakinyo Wasiu Kareem, *Department of Mechanical Engineering, Kwara State University, Malete*

Dr Taofik Omoniyi Amoloye, *Department of Aeronautical and Astronautical Engineering, Kwara State University, Malete*

Dr Abubakar Isah, *Airforce Institute of Technology (AFIT), Kaduna*

Prof Ibrahim Dauda Muhammad, *Department of Mechanical Engineering, University of Abuja*

Dr Henry Ekene Mgbemere, *Department of Materials and Metallurgical Engineering, University of Lagos, Akoko, Lagos*

Dr. Yusuf Adiama, *Department of Environmental Health Science, Kwara State University, Malete, Nigeria*

Dr. Mutiu A. Alabi, *Department of Biochemistry, Kwara State University, Malete, Nigeria*

Dr. Adegbenro Ajani, *Physics and Materials Science, Kwara State University, Malete, Nigeria*

Dr. Olayinka Abosede Ojo, *Department of Animal Production, Kwara State University, Malete, Nigeria*

Dr. Christiana O. Oke, *Department of Plant and Environmental Biology, Kwara State University, Malete, Nigeria*

Dr. Taiye Olushola Adeoye, *Department of Geophysics, University of Ilorin, Ilorin, Nigeria*

Dr. Gabriel Efomeh Omolaiye, *Department of Geophysics, University of Ilorin, Ilorin, Nigeria*

Dr Kabir Oloredede, *Department of Mathematics and Statistics, Kwara State University, Malete*

Dr Monsurat Omolara Balogun, *Department of Electrical and Computer Engineering, Kwara State University, Malete*

Dr. Seriki Aliyu, *Department of Computer Science, Abdulrasaq Abubakar Oluwatoyin University, Ganmo*

Dr. Lukman Adewale Ajao *Federal University of Technology Minna Niger state.*

Dr Sulaiman Olaniyi Abdulsalam, *Department of Computer Science, Kwara State University, Malete*

Dr Ronke Seyi Babatunde, *Department of Computer Science Kwara State University, Malete*

Dr M Abdulraheem, *Department of Computer Science University of Ilorin, Ilorin, Nigeria*

Dr. Saheed Kayode Yakub, *Department of Computer Science, American University of Nigeria Yola*

Author Guidelines

Technoscience Journal for Community Development in Africa is a peer-reviewed, biannual journal jointly published by the Faculties of Agriculture, Engineering and Technology, Pure and Applied Sciences, and Information and Communication Technology at Kwara State University Malete, Nigeria. The Journal publishes original and scientific problem-oriented collaborative research in Science and Engineering aimed towards community development in any part of Africa. Its scope covers the following thematic areas under the four identified disciplines:

1. *Engineering/Technology*: Structures, Thermo-fluids, Controls & Optimisation, Electrical, Aeronautics and Astronautics, Aviation, Irrigation System, and Farm Machinery & Power;
2. *Pure and Applied Sciences*: Physical sciences, Mathematical sciences, Basic & Allied Health sciences, as well as Biosciences and Biotechnology;
3. *Agriculture*: Food Science & Technology, Animal husbandry, Diary Science, Agronomy, Crop Protection, Agricultural Biotechnology, Genomics, Soil Sciences, and Agricultural Economics & Extension;
4. *Computer and Information Sciences*: Software Development, Hardware Implementation, Information Security, Bioinformatics, Artificial Intelligence, Data Science and current trends in Computing.

Frequency of Publication

The Journal is published twice a year in June and December.

Copyright & Declaration

Opinions expressed in the Journal are solely those of the authors and do not necessarily reflect the views of the editors or the publisher. Materials published in the *Technoscience Journal for Community Development in Africa* are copyrighted in its favour. As such, no part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, or any information retrieval system, without the prior written permission of the publisher.

Whilst every effort is made by the publisher and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this Journal, they wish to make it clear that the data and opinions appearing in the articles and advertisement herein are the responsibility of the contributor or advertiser concerned. Accordingly, the publisher and the editorial committee accept no liability whatsoever for the consequence of any such inaccurate or misleading data, opinion or statement.

Publication Ethics

The manuscript must represent original work by the author(s). None of the material should be covered by any copyright. If copyrighted material exceeding 100 words from a journal article or 500 words from a book is used, the author must obtain written permission for the copyright holder for its use. Furthermore, this work should not infringe any intellectual property rights/secrecy laws of any person/organisation/government/public or private agency, nor should it contain any defamatory matter. KWASU Press and Publishing does not bear any responsibility for verifying copyright permissions provided by the author. Any breach of copyright laws will result in retraction of the published article/material as well as reporting to relevant authorities at the authors' institutions.

The Journal uses appropriate originality checker software to check manuscript for plagiarism and other publication malpractices. Therefore, by submitting a manuscript to the Journal, the author agrees to necessary originality check for evaluation purposes.

Author must not have more than one article in an issue. Author whose name was not declared as a contributor during the initial manuscript submission but was added later at any stage of manuscript revision will not be

recognised as a contributor unless the Journal Editor and Section Editor are convinced of his/her genuine contribution.

Manuscripts Submission

Submission of a manuscript implies that the work has not been published before and is not under consideration for publication anywhere else; that its publication has been approved by all authors, as well as responsible authorities, where necessary, at the institute where the work is carried out and/or funding organisation. The publisher will not be held legally responsible should there be any claims for compensation.

Authors are required to comply with the following guidelines:

1. Organisation of the text should be in the following order:
Sub-discipline category
Title of manuscript
Author(s') name(s)
Address(es) of Author(s) with e-mail address(es) and Telephone number of Corresponding Author
Abstract
Keywords
Introduction
Materials and methods
Results and discussion
Conclusion
Acknowledgement (if any)
References
2. Please ensure to specify one sub-discipline category that is most suitable for your manuscript at top left hand corner of the first page of the manuscript from the following: Engineering and Technology; Agriculture; Pure and Applied Sciences; Computer and Information Sciences. You should also indicate whether your manuscript is a research article or review article (e.g., Sub-discipline Category: Engineering & Technology, Research Article; or Pure & Applied Sciences, Review Article).
3. Title of the manuscript should be brief containing a maximum of 21 words.
4. There should be a short running title of not more than 10 words that will run across every page of the manuscript.
5. Authors' full names (first-name, middle-name, and last-name), affiliations (Department and Institution) and functional email address of all authors should then follow. One of the authors should be assigned as the corresponding author.
6. Research article or review article should be 3,500-8,000 words, accompanied by an abstract of 150-200 words and 5 keywords.
7. Manuscript should be typewritten in Microsoft Word, with Times New Roman font, size 12, double line spacing and normal margin (1 inch all sides).
8. Headings and sub-headings of different sections should be clearly defined and consecutively numbered with Arabic numerals.
9. Tables and figures when used must be cited in the text and placed as close as possible to where they are cited and not separate at the back of the entire manuscript. Tables and figures are numbered consecutively throughout the text but independent from each other. Every table and figure should have a caption. A table caption is centred above the table; a figure caption is centred under the figure.
10. For enumeration and measurement, use numerals whenever a number is followed by a standard unit of measurement e.g. 2 g, 7 days; otherwise, use words for one through to nine and numerals for larger numbers. Report all data in metric unit and provide at least one measure of variability (e.g. standard

error or standard deviation) when reporting quantitative data. Abbreviations of any term should be spelled out in full at first mention.

11. The text should adhere to the citation and referencing style of the American Psychological Association (APA), 7th edition.
12. The Journal uses double blind review process in which the process of reviewing manuscript is based on the anonymity of the author and the confidentiality of reviewers;
13. The Editorial Board reserves the right to edit a manuscript to make it more readable.
14. Manuscript should be submitted online at <https://journals.kwasu.edu.ng/index.php/technoscience/index>. The Editor can be reached at olayinkaj.yusuf@kwasu.edu.ng; technoscience2009@gmail.com.

Contacts

Associate Professor Olayinka Jelili Yusuf

Faculty of Agriculture, Kwara State University, Malete,

P.M.B 1530, Ilorin, Kwara State, Nigeria

Email: olayinkaj.yusuf@kwasu.edu.ng; technoscience2009@gmail.com

<https://kwasu.site/index.php/technoscience>

Published by

KWASU Press and Publishing

Kwara State University, Malete

P.M.B. 1530, Ilorin, Kwara State, Nigeria

kwasupress@kwasu.edu.ng; kwasupress@gmail.com

Technoscience

Journal for Community Development in Africa

Vol. 4 2025

<https://journals.kwasu.edu.ng/index.php/technoscience>

ISSN 2659-0573

Contents

Editorial

<i>Olayinka Jelili Yusuf</i>	i
------------------------------------	---

Analyzing the effects of ICT infrastructure adoption on agricultural output in Nigeria: An error correction model approach <https://doi.org/10.5281/zenodo.18105551>

<i>Olatunji Yusuf Ambali, Yah-ya Ibrahim Abubakar, Zainab Tope Saka, Ololade Latifat Abdulrahman, Mariam Ajoke Ibrahim</i>	1
--	---

Soil characterization and land suitability evaluation of Teaching and Research Farm, Kwara State University, Malete <https://doi.org/10.5281/zenodo.18105775>

<i>Kabir Kayode Adebayo, Toyeeb Abayomi Abioye, Adesina Abdulkabir Wahab, Yusuf Folohunsho Abdulkareem</i>	11
--	----

Performance, prime cut and meat quality of broiler chickens on diets supplemented with dried powdered spices and tomato fruit nmusa

<i>Hakeem Ishola, Kazeem Dauda Adeyemi, Oluwasegun Michael Adesina, Ridwan Olanrewaju Imam Habeeb Olanrewaju Jimoh, Samuel Ayomide Olaoye, Tobiloba Cecilia Oni and Oluwasemilore Jemimah Eshorun</i> ..21	
--	--

Meat quality of west African dwarf goat fed with some selected African herbs

https://doi.org/10.5281/zenodo.18108442	
---	--

<i>Akeem Olayemi Raji, Dupe Olufunke Ogunbosoye, Ade Isaac Afe, Hakeem Ishola, Esther Adesola Oke</i>	31
---	----

Assessing the impact of *Sternochetus mangiferae* (Coleoptera: Curculionidae) infestation

on morphometrics and nutritional composition of mango https://doi.org/10.5281/zenodo.18108465	
---	--

<i>Victor Edoh Odeje, Olusegun Adebayo Ojumoola, Adebayo Amos Omoloye</i>	41
---	----

Comparative effects of poultry manure and NPK top dress with urea on growth and yield of maize

https://doi.org/10.5281/zenodo.18109224	
---	--

<i>Aishat Atinuke Yusuf, Adebayo Abayomi Olowoake</i>	49
---	----

Combined effect of biochar and castor cake on soil properties and yield of *Amaranthus caudatus* L. <https://doi.org/10.5281/zenodo.18109249>

<i>Oluwatosin Tayo Ajiboye, Adebayo Abayomi Olowoake</i>	59
--	----

Oviposition site preferences of fall armyworm moth, *Spodoptera frugiperda* J. E. Smith (Lepidoptera: Noctuidae) on selected crops

https://doi.org/10.5281/zenodo.18108486	
---	--

<i>Olusegun Adebayo Ojumoola, Okiki Jumoke Durodola, Mujidat Temidayo Lawal, Judith Adejoke Falola-Olasunkanmi</i>	69
--	----

Selected soil properties as influenced by cropping system and sampling depths

in Igboora, Nigeria https://doi.org/10.5281/zenodo.18108499	
---	--

<i>Noah Olugbemiga Olla, Samson Oguntola Ogunjinmi, Kayode Ayanwusi Akanji, Tolu Onaolapo Oyaniyi, Muibi Ishola Olaniyan, Samson Adebamiji Ojeniyi</i>	77
--	----

Evaluation of rhizobia inoculants and fungicides in the management of fusarium wilt disease of cowpea (*Vigna unguiculata* (L.) Walp) <https://doi.org/10.5281/zenodo.18108515>

<i>Bolanle Foluke Oke, Adefoyeke Olufunmilayo Aduramigba-Modupe A</i>	85
---	----

Fracture toughness, flexural and compressive properties of *Delonix regia* pod-eggshell particle reinforced virgin low-density polyethylene nanocomposites <https://doi.org/10.5281/zenodo.18108812>

<i>Sefiu Adekunle Bello, Adijat Ashifat, Davina Ajetomobi, Jeremiah Ponle, Maruf Yinka Kolawole, Funsho Olaitan Kolawole, Suleiman Danjuman Daudu, Mohammed Kayode Adebayo, Aisha Mayowa Akintola, Abdullateef Bolaji Jimoh</i>	93
---	----

Design, fabrication and performance analysis of a locally sourced hot air balloon for-High temperature environments https://doi.org/10.5281/zenodo.18108801	
<i>Taofiq Omoniyi Amoloye, Francis Ayomide Adedeji, Abdulfatai Olanrewaju Sulaiman, Abdulbaqi Jinadu, Olalekan Adebayo Olayemi</i>	105
Deformation and material removal mechanisms of nanometric cutting of silicon at different depths of cuts using molecular dynamics simulation https://doi.org/10.5281/zenodo.18108776	
<i>Tirimisiyu Olaniyan, Peter Odedeyi, Victor Ejiofor</i>	119
Adedayo Deborah Adeyinka-Aderanti, Ademola A. Agbeleye, Foluso O. Agunbiade, Johnson Olumuyiwa Agunsoye https://doi.org/10.5281/zenodo.18108726	
<i>Review of the use of clay-based composites for water filtration applications in rural areas</i>	129
Kehinde Peter Alabi, Abba Modu Busami https://doi.org/10.5281/zenodo.18108681	
<i>Effect of hot water treatment on some post-harvest qualities of stored sweet potato tuber</i>	147
Lead paint hazards in Nigeria: Public health and environmental impacts oviposition	
<i>Abba Musa, Aliyu Hussaini, Auwal Shehu Ali, Ibrahim Bello, Shafiu Sani, Mahmoud Darda'u Musa, Fatima Bashir Alkali</i>	149
Amylase production by solid-state fermentation of corn (<i>Zea mays</i>) stem using fusarium and mucor https://doi.org/10.5281/zenodo.18108552	
<i>Majekodunmi Rachael Adedayo, Bukola Aishat Hammed</i>	159
Comparative effect of sucrose, fructose and glucose concentration on the survival rate of tomato (<i>Solanum lycopersicum</i> L.) in tissue culture ishiola	
<i>Yejide Kafayat Fafiyebi, Abiodun Abass Otun, Omobolanle Kafayat Oyelami, Paul Rotimi Atanniyi, Adediwura Ifeoluwa Ajibola-Akanbi</i>	167
Iron ore prospecting using remote sensing and aeromagnetic data in parts of sheet 224 (Osi), Nigeria https://doi.org/10.5281/zenodo.18108624	
<i>Bashiru Alaba Ojulari, Saminu Olatunji, Ismail Oluwaseye Folorunsho</i>	177
A comparative machine learning framework for breast cancer diagnosis: Benchmarking algorithms and emphasizing model interpretability https://doi.org/10.5281/zenodo.18108591	
<i>Oni Patrick Adebayo, Ibrahim Ahmed, Ibrahim Maiji Garba, Azeez Daramola Mustaph, Kamoru Tayo Oyeleke</i>	187
Survey of medicinal plants used for treatment of rheumatism, arthritis and boils in Moro local government area of Kwara State https://doi.org/10.5281/zenodo.18108538	
<i>Latifat Olabimpe Sidiq</i>	199
Cross-platform mobile application development using the low code technology and free and open-source technology https://doi.org/10.5281/zenodo.18109033	
<i>Fatima Enehezei Usman-Hamza, Oluwafemi Ayobami Olutuase, Abdullateef Oluwagbemiga Balogun, Hammed Adeleye Mojeed, Shakirat Aderonke Salihu, Abimbola Ganiyat Akintola, Amos Orenyi Bajeh, Ghaniyyat B. Balogun, Modinat A. Mabayoje, Peter O. Sadiku, Ikeola Suhurat Olatinwo, Muhammed Jamiu Abdulrafiu, Adeleke Raheem Ajiboye</i>	211
The critical role of hyperparameter tuning in machine learning: Implications for reproducibility and model comparison https://doi.org/10.5281/zenodo.18108973	
<i>Rafiu Mope Isiaka, Shakirat Ronke Yusuff, Akinbowale Nathaniel Babatunde, Shuaib Babatunde Mohammed</i>	227

Building a Yoruba text to speech engine for automatic reading machine: A concatenative Approach https://doi.org/10.5281/zenodo.18109021	
<i>Surajudeen Adewale Yekeen, Abdulazeez Olorundare Ajao, Kabirat Oyinlola Raheem, Khadijat Oladoyin Mustapha, Jumoke Falilat Ajao</i>	241
A lightweight deep learning model for intrusion detection in Internet of Medical Things (IoMT) devices using weight pruning technique https://doi.org/10.5281/zenodo.18109001	
<i>Yakubu Ibrahim, Ibrahim Yusuf Fagge, Audu Musa Mabu</i>	251