HO TECHNICAL UNIVERSITY

FOOD, AGRICULTURE, TECHNOLOGY & SUSTAINABILITY CONFERENCE '25

THEME RETHINKING THE FUTURE OF FOOD & ITS ALLIED SYSTEMS IN AN ERA OF SUSTAINABILITY & CIRCULARITY

Date SUN. 16TH - WED. 19TH NOVEMBER, 2025

Time 9:00 A.M. EACH DAY

Venue HO TECHNICAL UNIVERSITY, HO [V/R]

FOREWORD

It is a distinct honour and pleasure to welcome all participants, partners, and distinguished guests to the Food, Agriculture, Technology and Sustainability Conference under the thought-provoking theme **"Rethinking the Future of Food and Its Allied Systems in an Era of Sustainability and Circularity."**

As the 21st century presents us with an unusual opportunity and responsibility, it has become more pertinent to explore ways of transforming our food systems in a more resilient and sustainable ways that benefit both people and our ecosystem. As we encounter multiple challenges of ensuring food security and combating climate change, the need to espouse innovative, inclusive, and sustainable approaches to food production, processing, distribution, and consumption has never been more crucial.

This Conference, therefore, provides an important platform to interrogate the multifaceted interconnectedness between food, agriculture, technology, and sustainability. It invites us to critically explore how indigenous and contemporary knowledge via science, together with emerging digital tools can be harnessed to promote efficiency, equity, and resilience within the agricultural and food value chains. Moreso, it presents us with the opportunity to adopt circular models that minimise waste, optimise resource use, and protect our ecosystems for future generations.

As a University, we delight in being a proactive institution deeply committed to Ghana's technical and vocational education transformation agenda, and beyond, which can be transposed and escalated to the global level. Guided by our mission to provide hands-on training, applied research, and innovation-driven learning, we continue to equip students, entrepreneurs, and industry partners with the practical and necessary competencies to address the real-world challenges. Our emphasis on sustainability and technology-driven solutions reflects our commitment to the future of food and agriculture which depends on scientific innovation, as well as ethical responsibility and inclusion on all levels.

Through this Conference, we intend to foster multi-sectoral collaborations and dialogues among academia, governments, industry, policymakers and development agencies . It is our hope that the insights and outcomes from the Conference will contribute meaningfully to Ghana's efforts toward achieving the Sustainable Development Goals and propel result-oriented action towards zero hunger, responsible consumption and production, climate action, and partnerships for development.

I commend the organising committee, authors, partners, sponsors, and participants whose commitment and vision have made this Conference a reality. May our engagements here ignite new partnerships, practical innovations, and policy directions while inspiring new thinking and actionable strategies that contribute to Ghana's journey towards sustainable food systems and circular economic growth.

I wish you a rewarding and impactful conference experience.

Prof. Ben Q. Honyenuga
Vice-Chancellor

HOST

PROF. BEN QUARSHIE HONYENUGA

Vice-Chancellor - HTU

PROFILE OF PROF. BEN QUARSHIE HONYENUGA

Prof. Ben Q. Honyenuga is a Professor in Management Sciences. His research focuses on Knowledge Management, Management Innovation, High Performance Organizations, African Business and Entrepreneurship .

He has rich experience in teaching, spanning over two decades at the undergraduate and graduate levels.

Prof. Honyenuga has significant number of publications to his credit as journal articles, edited book chapters, refereed conference proceedings, course manuals and technical reports. He has also attended and presented papers in several national and international academic conferences.

He attained the position of a Senior Member of the European Alliance for Innovation (EAI) in 2020, having met the required high index based on publications in innovation and related fields.

Prof. Honyenuga was invited as an expert to participate in the African Union Commission Conference in Addis Ababa on Youth Entrepreneurship Promotion in Africa, dubbed Africa Talks Jobs.

Prof. Honyenuga is a UN Certified Trainer of Trainers in Conflict Transformation. He is a member of International Management Development Association (IMDA), Ghana Institute of Management, Decision Sciences Institute and the British Academy of Management. He serves on a number of National Boards and Committees.

As an excellent and visionary Vice-Chancellor, he has steered the University into winning many awards, nationally and globally. His most recent award in August 2025, is the highest honour bestowed by ATUPA to individuals who have made exceptional contributions to ATUPA and advancing Technical and Vocational Skill Development (TVSD) across the continent. The award celebrated him for his visionary leadership, strategic advocacy, and unwavering commitment to promoting the African TVET education agenda.

With his transformative leadership, he has catapulted the University into a global limelight, making the University, an international force to reckon with, in the higher education space. He is currently serving his second term as Vice-Chancellor.

Prof. Honyenuga has won many international research grants and led many research projects such as Ghana Circular Economy Centre Project implemented by UNIDO with funding from the Global Affairs, Canada and hosted by HTU. Other projects led by him, includes Skills Initiative for Africa (SIFA) Project to establish centre of excellence in Biomedical Engineering at HTU, International Solar Alliance Project on Renewable Energy, Green People's Energy Project of GIZ, SDF funded projects and Erasmus+ Project.

Prof Honyenuga has been a formidable figure in the transformation of Ho Polytechnic/ Technical University for over two decades. When he was the Dean of Students Affairs, he established the Dean of Students Foundation with the support of the SRC. The foundation has since become the main source of support to a host of needy but brilliant students at Ho Technical University.

As the Vice Rector/First Pro -Vice- Chancellor, he played important roles in guiding the Polytechnic /University through what is described as the largest transformation agenda of technical education in recent times. Being the first substantive Vice-Chancellor of HTU, Prof Honyenuga continues to provide essential leadership that is transforming Ho Technical University into a reputable, enviable and internationally relevant University.

GUEST OF HONOUR

PROFILE OF GUEST OF HONOUR

Hon. Eric Opoku is currently the Minister in charge of Food and Agriculture in Ghana. Prior to this noble office, Hon. Opoku served as a Member of Parliament for the people of Asunafo South Constituency for 20 years. He is serving his fifth term as Member of Parliament. In Parliament, he served on a number of committees, including the Privileges, Finance, Appointment, Subsidiary Legislations; and most importantly, he served as the Deputy Ranking Member from 2013 to 2017, and subsequently, the Ranking Member for Food, Agriculture and Cocoa Affairs between January 2017 and January 2025.

He has also served as a Deputy Regional Minister for Brong Ahafo and Ashanti Regions from 2009 to 2013, and Regional Minister for both Brong Ahafo and Ashanti Regions from 2009-2017. Hon. Eric Opoku is both Ghanaian and United Kingdom trained in the area of Economics, Law and Governance. He had his Bachelor of Arts Degree in Social Science from Kwame Nkrumah University of Science & Technology in 2004. He also holds a Master of Laws (LLM) from the University of Essex, UK. He has in-depth knowledge in Governance, Economics, Agriculture and its value chains Development. He is a farmer and a mentor for Ghanaian Youth Leaders.He was appointed Minister responsible for Food and Agriculture in February 2025.

KEYNOTE SPEAKER

PROF. ERIC DANQUAH,

BSC. (UG), MPHIL, PHD (CANTAB), FCPS, FCCS

PROFILE OF PROF. ERIC YIRENKYI DANQUAH,

Prof. Eric Yirenkyi Danquah is a globally recognized plant geneticist, science leader, and a professor of Plant Molecular Genetics at the University of Ghana. He is the Founding Director of the West Africa Centre for Crop Improvement (WACCI), established in 2007, which has become a top centre for postgraduate training and research in plant breeding, genetics, and seed science. Under his leadership, WACCI has enrolled over 160 PhD students from 19 African countries and graduated more than 120, many of whom now lead agricultural research and innovation across the continent. He led the teams that released the WACCI high-yielding maize and tomato hybrids now under commercialization in Ghana.

Prof. Danquah has helped WACCI raise over US$40 million in funding, building world-class infrastructure and advancing research for food security. He has published more than 180 peer-reviewed scientific articles and contributed to books and policy documents on crop improvement, biotechnology, and food systems. His research focuses on identifying important genes and traits in staple crops and has played a key role in driving agricultural transformation through science and innovation. He has served in various leadership roles at the University of Ghana, including Dean of International Programmes, Director of the Biotechnology Centre, and Head of the Department of Crop Science. He is also Founder and Chief Executive Officer of the Eric Danquah Foundation, and has served as Chairman of the Advisory Board for Samira Empowerment and Humanitarian Projects, as well as Chair of the Governing Council of the University of Mines and Technology, Ghana. Internationally, Professor Danquah is an Adjunct professor at Cornell University (USA) and Murdoch University (Australia). He was the inaugural President of the African Plant Breeders Association (2019–2023) and serves on many international boards and committees, including the UK-CGIAR Centre, the Climate Resilient Cereals Innovation Lab at Kansas State University, and the Innovation Lab for Crop Improvement at Cornell University, USA.

He holds a BSc in Crop Science from the University of Ghana, and both an MPhil in Plant Breeding and a PhD in Genetics from the University of Cambridge, UK. Professor Danquah has received many national and international awards, including the Africa Food Prize (2022), the GCHERA World Agriculture Prize (2018), and the University of Ghana Distinguished Award for Meritorious Service (2014). He was named among the 100 Most Reputable Africans by Reputation Poll International in 2023 and 2024 and received the Outstanding African Achiever Award from the African Genius Awards in 2023.

Prof. Danquah is the Chairman of the Governing Board of the Ghana National Research Fund and a former Independent Board Director of the Agricultural Development Bank, Ghana. He is known for his commitment to mentoring early-career scientists, building partnerships, and advancing youth and women in agriculture. Passionate about education, science policy, and innovation, he works tirelessly to promote resilient food systems and sustainable development for Africa.

KEYNOTE SPEAKER

PROF. (MRS) IBOK N. ODURO

Kwame Nkrumah University of Science and Technology (KNUST)

PROFILE OF PROF. (MRS) IBOK N. ODURO

Professor (Mrs.) Ibok Oduro is an astute researcher and a Professor of Postharvest Technology at the Department of Food Science and Technology, KNUST. She had her BSc. (1985) and MSc. (1987) Degrees in Chemistry at the University of Ibadan, Nigeria, and a PhD in Postharvest Technology at the University of Cranfield, UK. Professor Oduro has distinguished herself in developing innovative approaches for nutrient enrichment with Indigenous plant and animal species and in postharvest management of crops. Her impactful research and leadership (with over 170 high-impact publications) have contributed to efforts towards alleviating food insecurity and malnutrition in Africa.

Her 30+ years of teaching and research in the food and beverage sector are greatly influenced by her chemistry background which makes her better appreciate the reactions underpinning chemical composition and processing behaviour of diverse food matrices. She has impacted hundreds of students and industry in her career, and supervised over 25 PhDs, 70 master students and several hundreds of undergraduates from the departments of Food Science and Technology, Biochemistry and Biotechnology, Horticulture and Animal Science. Her educational contributions extend beyond Ghana, having co-supervised master and PhD students in Belgium, and Mali. Mrs Oduro is also an external assessor for postgraduate theses across the public universities in Ghana and is also an external examiner for academic and professional promotions, in both Ghanaian and International research Institutions and Institutions of Higher Education.

Passionate about mentoring young scientists to pursue STEM careers, she co-founded the now vibrant and internationally recognised Women in STEM (WiSTEM), Ghana, with their flagship program, STEM CAMP for girls, and the Ibok Oduro Foundation in 2018 and 2021, respectively to culminate her lifelong efforts and aspirations for the Ghanaian youth. She is also the chairperson, Ghana Board and a facilitator of the African Chapter of the International Leadership Foundation (ILF). Prof Oduro has served/ serves on multiple committees and chaired several strategic committees, contributing to Ghana's research and development policies. These include national food safety policy, universities' curricula development and accreditation, governing councils of Junior and Senior High Schools as well as being an imminent member of the Council for Scientific and Industrial Research, CSIR-Ghana (2014 to 2024). Her distinguished career demonstrates her commitment to advancing knowledge and supporting sustainable solutions that improve educational ecosystems and livelihoods.

Prof Oduro's contributions to science education, mentorship and research leadership have been recognized on several national and international platforms. Prominent among these are, being inducted as fellow to the Ghana Academy of Arts and Sciences (2024), Outstanding individual in Academics and Research Award by the Women in Chemistry Network and the Chemical Sciences Excellence Awards (2024), the Africa Role Model in Leadership Excellence and Youth Mentoring Award (August, 2022), Special Recognition of Outstanding Contribution to Research – World Scientist and University Rankings, World AD Scientific Index Ranking System (2021), Special Honour/Recognition for meritorious contributions and for being an exemplary member of the Ghana Science Association (2021), Christian Women Recognition Award (Esther Award) in recognition of the meritorious labour in His Kingdom (2019), Excellence and Innovation in Sweetpotato Award: Communication for Change in recognition for the promotion of sweetpotato yoghurt, a fortified yoghurt snack to help curb vitamin A deficiency syndrome (2018), The Professor Samuel Evans Adunyah and Madam Abena Nuamah Award for Outstanding Accomplishments, Dedicated Service and Teaching Excellence in Biochemistry (2013/2014 Academic year), The African Women in Agricultural Research and Development (AWARD) recognition for commitment to excellence in mentoring (2011-2012) and the Faculty of Biosciences Best Senior Member Award (2007/2008 Academic Year).

Beyond academia, Professor Oduro is the President of Women in Science, Technology, Engineering and Mathematics Ghana (WiSTEMGh), Board Chair of the International Leadership Foundation, Ghana and Founder of the Ibok Oduro Foundation, which mentors emerging scientists, leaders and entrepreneurs. Her mentorship has shaped many professionals now occupy leading positions in academia, government, international organizations, and agribusiness, several of whom have founded successful food processing and nutrition enterprises."

A true trailblazer, it is no surprise that Prof. Ibok Oduro is the immediate-past and first female Provost of the College of Science (2016- 2019), making her the First Female academic to occupy such high managerial and leadership position at KNUST after serving in different deanship and Head of Department positions. Mrs Oduro is a teacher of the gospel of Christ Jesus and is married to Prof William Oduro.

BRIEF HISTORY

Ho Technical University

Ho Technical University started as a Technical Institute in 1968 with the primary objective of providing pre-technical education. By 1972, the Institute upgraded its courses, resulting in the expansion of the pre-technical programmes into courses in engineering and vocational Melds such as Basic Engineering, Agricultural and Mechanical Engineering, Building Technology, Fashion, Hospitality Management and Business Education.

In 1986, the Institute became a Polytechnic. It however continued to operate as second cycle institution, until 1993, when the Polytechnic was upgraded to a fully-dedged tertiary institution by the enactment of PNDC Law 321 and charged with the responsibility of training students in the technical and vocational skills to the Higher National Diploma [HND] level.

Subsequently, in 2007, Polytechnics were given the mandate by the Polytechnics Act 745, to award their own degrees to the highest level.

Ho Technical University has the mandate to award degrees, diplomas, certificates and other qualications to the highest level in Engineering, Science and Technology based disciplines, Technical and Vocational Education and Training, Applied Arts and related disciplines.

OUR VISION

To become a hub of practical education and innovation advancing sustainable global development.

OUR MISSION STATEMENT

To develop highly competent human capital through career-focused education, skills training, research and innovation in partnership with stakeholders.

ETHICS POLICY STATEMENT

Ho Technical University is a secular and non-partisan public institution. Admissions and academic awards are based on merit without regard to ethnicity, race or nationality, religious affiliation or beliefs, physical disabilities or gender. Academic and social interactions within the University are governed by the principles of fair play, justice, honesty, moral rectitude, and respect for authority, human rights and the environment.

OUR CORE VALUES

Integrity:
Honesty, loyalty and accountability

Social Inclusiveness:
Gender equity, people centeredness and fair opportunity for all

Environmental Sustainability:
Environmental consciousness and community development.

Quality:
Excellence through pursuing highest standards

Innovativeness:
Problem solving through creativity, inventiveness and entrepreneurship

STRATEGIC MANDATE

The Technical Universities Act 2016 (Act 922) defines the mandate to principally provide career-oriented vocational and technical higher education, undertake vocational and technical research and propagate applicable knowledge. The University has additional mandate to build and nurture relationships with professional bodies and industry. Its strategic mandate is couched in the Strategic Plan of the University.

CONFERENCE OVERVIEW

Welcome to the Food, Agriculture, Technology & Sustainability (FATAS) Conference 2025. This Conference brings together researchers, academics, policymakers, and industry professionals to explore innovative solutions in food security, agriculture, and sustainability.

The Conference is a premier interdisciplinary event by HTU, aimed at fostering innovation, collaboration, and proposing technologically sustainable solutions to global challenges in food systems, agriculture and the environment. The Conference is a build-up on the legacy of HTU's Food Hygiene and Sanitation Conference, expanding its scope to address contemporary global issues in food security.

Purpose

The purpose of this conference is to facilitate knowledge exchange, capacity building, and collaboration among researchers, industry professionals, policymakers, and students.

The Conference will showcase cutting-edge research, technologies, and best practices, while generating actionable recommendations for improving food systems and circularity for sustainability.

Target Participants

This conference is expected to draw participants from the following:

Research Institutions , Academia, Non-governmental organisations , Financial Institutions, Industry and Business, Civil Society Groups, Private Sector Institutions, State /Government Agencies, Media, International Missions and Indigenous Communities .

OPENING CEREMONY

8:00 a.m.	Registration and Networking session	Registration Desk
9:00 a.m.	Guests seated	Ushers

PART 1 | 9:05 A.M.

Opening Prayer	Rev. Fr. Sylvester Agbezuge
LOC's Welcome Statement	Prof. Christopher Mensah
Vice-Chancellor's Address	Prof. Ben Q. Honyenuga
Interlude	HTU Staff Borborbor Group
Key Note Address	Prof. Eric Yirenkyi Danquah

HEALTH BREAK

Keynote Address	Prof. Mrs. Ibok Nsa Oduro
Remarks	Minister of Environment Science & Technology
	Executive Director, Ghana Circular Economy Centre (GCEC)
Address by Guest of Honour	Minister of Food and Agriculture
Photography	

PART 2 – PANEL DISCUSSION

Introduction of Panel Members and Discussion	Moderator, Prof. Eli A. Atatsi
Closing Remarks by Vice-Chancellor and Presentation	Prof. Ben Q. Honyenuga
Announcements	MC
Closing Prayer	Rev. Fr. Sylvester Agbezuge
Photography	

MCS:
1.DR. STANLEY NELVIS GLATE
2.MISS JULIET NUGBLE

LIST OF PANELISTS FOR PANEL DISCUSSION

Prof. Eli Atatsi
Dean Int. Programmes and Institutional Linkages - HTU
-Moderator-

Prof. (Mrs.) Ibok N. Oduro
Kwame Nkrumah University of Science and Technology, Kumasi
-Academia-

Dr. Felix Kamassah
President of the Vegetables Producers & Exporters Association of Ghana
-Farmer Association-

Dr. Grace Doku
Senior Lecturer, Department of Agricultural Sciences and Technology, HTU
-Academia-

Mr. William Dzamefe
Regional Director, Department of Agriculture
-Policy-

Mr. Joseph Yeboah
Strategic Partnerships and Engagements Lead, UNIDO, Ghana
-Strategic Partnerships-

BREAKOUT SESSIONS

VENUE: COMPUTER SCIENCE LAB, OCTAGON-HTU

Moderator: Prof. Maxwell Selase Akple | **Rapporteur:** Dr. Edem K. Honu & Miss. Joy Afua Agama

DAY 01 | AFTERNOON (15:00 – 17:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
The Unexplored Value of Cotton: A Case Study of Ghana's Cotton Value Chain	Christine A. Asigbe	15:00 - 15:20	20 mins
Closing the Loop: Innovative Circular Strategies to Slash Food Loss and Waste Across Supply Chains	Moudy Wiri	15:20 - 15:40	20 mins
Access to Quality Mechanisation Services and Gender Inclusion in the Volta & Oti Regions	Paul K. Oppong	15:40 - 16:00	20 mins
Use of the Analytic Hierarchy Process (AHP) Approach to Determine Preferences for Fuel Attributes for Fish Smoking in Ghana	Maxwell K. Boakye	15:60 - 16:20	20 mins

DAY 02 | MORNING (9:00 – 11:00AM)

PAPER TITLE	PRESENTER	TIME	DURATION
Technological Growth Mindset and Adoption of Green Technologies for Sustainable Agriculture	Samuel Yaw Lissah	09:00 - 09:20	20 mins
Impact of Land Use Land Cover Change on Land Surface Temperature in the Oti and Volta Region	Emmanuel Adu-Afari	09:20 - 09:40	20 mins
Sustainable Value Chains: An Assessment of Naturally Preserved Millet and Amaranthus Instant Porridge	Lyndah Mujombiza	09:40 – 10:00	20 mins
The Impact of Eco-Labeling on Green Products Adoption: The Mediating Role of Green Perceived Value	Ernest Kafui Tsetse	10:00 - 10:20	20 mins

DAY 02 | AFTERNOON (12:00 – 14:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
Growth and Yield Response of Oyster Mushroom to the Interaction of Composting Duration and Spawn Application Rate	Etornam Kosi Anku	12:00 - 12:20	20 mins
Suitability of Moringa, Baobab and Cashew Apple Powders as Supplements for the Cultivation of Oyster Mushroom	Etornam Kosi Anku	12:20 - 12:40	20 mins
Sustainable Subsistence Agriculture in Residential Real Estate: Exploring the Role of Vertical Gardens	Kafui Yawa Honu	12:40 - 13:00	20 mins
Inter-Generational Stewardship, Anticipated Regret, and Climate-Change Worry: A Moderated-Mediation Account of Smallholders' Willingness to Adopt Water-Saving Irrigation in Ghana	Laudina Gloria Mends	13:00 - 13:20	20 mins

BREAKOUT SESSIONS

VENUE: PRECISION QUALITY (PQ) INNOVATION HUB, HTU

Moderator: Prof. Emmanuel Letsyo | **Rapporteur:** Dr. Michael T. K. Todoko & Miss Anastasia Nuworsu

DAY 01 | AFTERNOON (15:00 – 17:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
Circular Economy Pathways for the Utilization of Banana Residues within the Agrifood Chain	Laudina Gloria Mends	15:00 - 15:20	20 mins
Improved Rocket Stove Technology for Reducing PAH Contamination in Smoked Grasscutter Meat: A Sustainable Approach for Safer Meat Processing in Ghana	D. Asante-Donyinah	15:40 - 16:00	20 mins
Exploit Potential of Urban Agriculture: Successful Strategies for Food Security and Poverty Reduction in African Cities	Prisca Rashidzai	16:00 - 16:20	20 mins
Quality Attributes of Ngopa and Zomi along the Palm Oil Value Chain	Liticia Effah-Manu	16:20 - 16:40	20 mins

DAY 02 | MORNING (9:00 – 11:00AM)

PAPER TITLE	PRESENTER	TIME	DURATION
Phenol-Pectin-Starch Composite Biomaterial for Edible Food Coating	Courage Sedem Dzah	09:00 - 09:20	20 mins
Narrowing the Flow of Materials in University Events and Activities in Ghana: Circular Economy Opportunities on Campuses	Harrison P. Adjimah	09:20 - 09:40	20 mins
Assessment of Farmers' Perception on the Effect of Climate Change in Igabi LGA Kaduna State, Nigeria	Salisu Ibrahim	09:40 - 10:00	20 mins
Innovative Uses of Banana Fruit in Waste Management Solutions	Sithandekile Sibanda	10:00 - 10:20	20 mins

DAY 02 | AFTERNOON (12:00 – 14:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
Genotypic Variation in Physio-Ultrastructural and Hormonal Regulation of Photosynthetic Efficiency in Rice Flag Leaves under Differential Nitrogen Supply	Shamsu Ado Zakari	12:00 - 12:20	20 mins
A Consumer Behaviour Model for Sustainable Diet Adoption: The Mediating Role of Sustainable Awareness	Stanley Nelvis Glate	12:20 - 12:40	20 mins
Development of Lactic Acid Bacteria and Yeast Starter Cultures for Safety and Improved Sensory Properties of Aliha	Felix Kwashie Madilo	12:40 - 13:00	20 mins
Microbiological Risk Assessment of Some Major Ready-To-Eat Foods Sold in the Various	Felix Kwashie Madilo	12:60 - 13:20	20 mins

BREAKOUT SESSIONS

VENUE: AMATROL LAB, HTU

Moderator: Prof. Richard Fiifi Turkson | **Rapporteur:** Ms. Divine Gbagbo & Ms. Akosua Ohema Safowa

DAY 01 | AFTERNOON (15:00 – 17:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
Climatic Factors Effects on Growth of Vegetables in the Volta Region of Ghana	G. S. Agbemavor Horlu	15:00 - 15:20	20 mins
Phosphorus-Rich Pyrolysis Char from Sewage Sludge: A Circular Approach for Agriculture, Soil Health, and Carbon Storage	Mathias Kleinke	15:20 - 15:40	20 mins
Indigenous Farmers' Perceptions and Adaptation Strategies in Crop Production on Climate Change: A Case Study of the Ho Municipality	John Yao Afetsu	15:40 - 16:00	20 mins
The role of Ho Technical University in Driving Ghana's Renewable Energy transition: Implications for Sustainable Agriculture and Transportation	Richard Fiifi Turkson	16:00 - 16:20	20 mins

DAY 02 | MORNING (9:00 – 11:00AM)

PAPER TITLE	PRESENTER	TIME	DURATION
From Crisis to Circularity: Transforming Food Systems for Climate Resilience in a Warming World	Moudy Wiri	09:00 - 09:20	20 mins
Automate the Boring Stuff to Increase Agricultural Production in Ghana	Paul Kwabena Oppong	09:20 - 09:40	20 mins
Simulating Climate Change Factors Effect on Stability of Size-Based Models of Fish Ecosystems	Saviour W. Akuamoah	09:40 - 10:00	20 mins
Comparison of Nutritional Quality, Antioxidant Activity, and Antimicrobial Activity of Three Light Soups Prepared in the Volta Region	Aaron Dzigbor	10:00 - 10:20	20 mins

DAY 02 | AFTERNOON (12:00 – 14:00PM)

PAPER TITLE	PRESENTER	TIME	DURATION
Assessing the Impact of Green Inclusive Leadership on Green Performance of Star Rated Hotels in Ho Municipal	Ernest Kafui Tsetse	12:00 - 12:20	20 mins
Urban and Peri-Urban Agriculture for Food Security	Mavherudze Talkmore	12:20 - 12:40	20 mins
Entrepreneurial Circularity and Sustainability Outcomes in Ghana's Agri-Food Sector: A Quantitative Assessment	Immaculate Asamenu	12:40 - 13:00	20 mins
International Tourists' Engagement with Indigenous Ghanaian Cuisines: Evidence from the Volta Region	M. Abla Kugbonu	13:00 - 13:20	20 mins

DAY 02 | EVENING - CONFERENCE CLOSING CEREMONY

TIME	ACTIVITY
3:30 p.m.	Conference Highlights and Communique
4:00 p.m.	Vice-Chancellor's Remarks
4:30 p.m.	Vote of Thanks

DAY 03

CONFERENCE EXCURSION/DEPARTURE - OPTIONAL

Departure: 8:00 A.M.

Loc: Amedzofe, Tafi Atome, Wli, Afadzato, Etc.

SIDE EVENTS

VENUE: STAR C CENTRE

DAY 01 | AFTERNOON (15:00 – 17:00PM)

EVENT TITLE	ORGANISERS	TIME	DURATION
Ghana Circular Economy Centre (GCEC) Networking And Partnership Session: Building Partnerships for Circular Economy Education and Practice in Ghana	GCEC, UNIDO	15:00 p.m. – 17:00 p.m.	2 Hours

DAY 02 | AFTERNOON (9:00 A.M. – 11:00 A.M.)

EVENT TITLE	ORGANISERS	TIME	DURATION
Book Launch: Baobab and Marula: New Solutions to Global Warming and Food Security	Prof. K. Fafa Egbadzor	9:00 a.m. – 11:00 a.m.	2 Hours

ABSTRACTS

The conference explores how technology is transforming food and agriculture toward sustainability. It highlights innovations like precision farming, AI monitoring, and biotechnology for efficient production. Focus areas include food security, waste reduction, and circular agricultural systems. Participants will examine policies and community roles in sustainable transitions. The event promotes collaboration among researchers, industry leaders, and policymakers. Its goal is to build a resilient global food future where technology and sustainability align.

THE UNEXPLORED VALUE OF COTTON: A CASE STUDY OF GHANA'S COTTON VALUE CHAIN

Christine A. Asigbe,
Richard S. Gbadegbe,
Mawuli Quashie
Divine Vigbedor

Department of Industrial Art, Ho Technical University

The cotton industry in Ghana has historically served as an important source of income for many Ghanaians. However, its fortunes have fluctuated over the years, and the industry is currently in a deplorable state. An examination of the cotton value chain reveals that cotton has numerous potential end uses beyond lint for fabric production, which could be harnessed to enhance economic development. Nevertheless, this potential remains largely untapped within Ghana's cotton industry, where the value of cotton is predominantly confined to lint and seeds. This study investigates the alternative uses of cotton within Ghana's cotton industry. Data were collected and analysed through a convergent parallel mixed-methods approach, employing both interviews and questionnaires. The findings revealed that producers do not make use of cotton stalks due to limited awareness of their economic value. Furthermore, seeds from the ginnery are underutilised, being primarily processed for oil and seed cake production. Consequently, the cotton value chain in Ghana generates low revenue, which has contributed to declining interest in the industry among key stakeholders. To revitalise the sector, policy, technical, and marketing interventions are required from both the government and relevant stakeholders.

Keywords: Cotton, Cotton by-products, Ghana textiles industry, Value chain

COMPARISON OF NUTRITIONAL QUALITY, ANTIOXIDANT ACTIVITY AND ANTIMICROBIAL

Aaron Dzigbor
Ruth Mensah
Epilogue Adekpui
Nathaniel Fiagborlo

Activity of Three Light Soups Prepared in the Volta Region

Light soups are liquid foods prepared by cooking meat or vegetables with seasonings. They are often consumed alone or with other dishes and are particularly recommended for convalescents due to their light and nutritious nature. The cooking process facilitates the extraction of bioactive compounds from the ingredients. Variations in the types of meat, fish, vegetables, and seasonings used may influence the nutritional composition and bioactive properties of the resulting soups, thereby affecting their potential health benefits. This study compared the nutritional composition and the antioxidant and antimicrobial activities of three light soups commonly consumed in the Volta Region of Ghana: herring light soup, fresh tilapia light soup, and chicken light soup. Each soup was prepared, sieved, and oven-dried at 45 °C. The dried samples were analysed for nutritional composition using standard methods. Antioxidant activity was determined through DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS [2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid)] assays, while antimicrobial activity was assessed using the agar well diffusion method. The results showed significant variations in nutritional composition. The fat content was highest in chicken light soup (22.73 ± 0.15%) and lowest in herring light soup (2.68 ± 0.31%), whereas protein content was highest in tilapia light soup (21.48 ± 0.22%) and lowest in chicken light soup (14.30 ± 0.13%). Tilapia light soup exhibited the greatest inhibition against E. coli, S. typhi, and S. aureus, while chicken light soup was most effective against P. aeruginosa, K. pneumoniae, and C. albicans. The herring light soup showed the highest DPPH antioxidant activity (44.00 ± 2.43%), whereas the chicken light soup recorded the highest ABTS activity (47.01 ± 8.09%). Overall, light soups prepared with different ingredients offer varying nutritional, antioxidant, and antimicrobial benefits, highlighting their potential functional value in human diets, particularly for convalescents.

Keywords: Bioactive compounds, Convalescent nutrition, Food analysis, Traditional Ghanaian cuisine

IMPROVED ROCKET STOVE TECHNOLOGY FOR REDUCING PAH CONTAMINATION IN SMOKED GRASSCUTTER MEAT: A SUSTAINABLE APPROACH FOR SAFER MEAT PROCESSING IN GHANA

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Polycyclic aromatic hydrocarbons (PAHs) are carcinogenic compounds commonly formed during the traditional smoking of meat in sub-Saharan Africa. Grasscutter meat, a culturally significant and protein-rich delicacy in Ghana, is frequently smoked using inefficient methods that generate high levels of PAHs, thereby posing public health risks and limiting its export potential. This study aimed to develop and evaluate an improved rocket stove for smoking grasscutter meat, with the objectives of reducing PAH contamination and enhancing thermal performance. The stove was designed with a double-chamber combustion system, integrated fat-drainage collectors, and ceramic-lined trays to prevent dripping oils from encountering open flames. Experimental evaluations were conducted in accordance with the ISO Controlled Cooking Test (CCT 4.2.1) protocol. Thermal efficiency, fuel consumption, particulate matter ($PM_{2.5}$), and carbon monoxide (CO) emissions were measured. PAH concentrations in smoked meat samples were determined using high-performance liquid chromatography (HPLC). Results indicated that the improved stove achieved a thermal efficiency of 31%, with significantly lower $PM_{2.5}$ and CO emissions compared with conventional smoking methods. Notably, several high-risk PAH compounds, including benzo[a]pyrene and benzo[b]fluoranthene, were not detected in the smoked meat. These improvements were attributed to enhanced combustion efficiency and effective control of fat-dripping pathways. This research demonstrates that innovative smoking technology can provide a sustainable and scalable approach to improving food safety and environmental health in traditional meat processing. The findings contribute to the advancement of circular and climate-smart agro-processing systems in Ghana and other sub-Saharan African contexts.

Keywords: Food safety, Ghana, Grasscutter meat, Polycyclic aromatic hydrocarbons, Rocket stove, Thermal efficiency, Sustainable smoking,

USE OF THE ANALYTIC HIERARCHY PROCESS (AHP) APPROACH TO DETERMINE PREFERENCES FOR FUEL ATTRIBUTES FOR FISH SMOKING IN GHANA

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Fish smoking is a traditional preservation method that relies primarily on firewood as the main energy source. In Ghana, firewood accounts for over 70% of the fuel used in fish processing. The fuel characteristics of firewood influence both the physical and sensory qualities of smoked fish. However, the role of fuel attributes in fish mongers' decision-making processes remains underexplored in Ghana. This study applied the Analytical Hierarchy Process (AHP) to assess the relative importance of different firewood characteristics to fish smokers. Using a structured interview approach, 27 fish mongers in Kpando-Torkor, a fishing community along the Volta Lake, were asked to rate eleven firewood attributes based on their importance. The overall average consistency ratio was below 0.1, indicating that the responses were consistent and reliable for explaining decision-making behaviour regarding firewood selection. The AHP results revealed that the most important attributes were long-lasting fire, high heat output during combustion, and high wood density. In contrast, firewood sparkle and odour were considered least important. The study demonstrates the usefulness of the AHP in evaluating the preferences of fish mongers for specific fuel characteristics. The findings provide insights that can inform policy on the selection of plant species suitable for woodlot production programmes in Ghana. Understanding local preferences for firewood attributes is essential for developing sustainable resource management strategies that ensure the continued availability of preferred species for fish smoking and other domestic energy uses.

Keywords: Analytical Hierarchy Process, Fish smoking, Firewood selection, Fuel characteristics, Ghana

TECHNOLOGICAL GROWTH MINDSET AND ADOPTION OF GREEN TECHNOLOGIES FOR SUSTAINABLE AGRICULTURE: 2-AND 3-WAY INTERACTION EFFECT OF CLIMATE-CHANGE WORRY AND INTER-GENERATIONAL STEWARDSHIP MOTIVE

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The wide-scale adoption of green technologies for sustainable agriculture (GT-SA) among sub-Saharan smallholders remains limited despite their evident agronomic and environmental benefits. Existing research has primarily focused on financial and infrastructural constraints, with little attention given to farmers' cognitive and socio-affective factors influencing technology adoption. To address this gap, this study positions a technological growth mindset as a key cognitive driver of GT-SA adoption intention, drawing on mindset theory, protection motivation theory, and value–belief–norm theory. We further propose that the motivational influence of technological growth mindset is moderated by two affective–moral conditions: climate-change worry and inter-generational stewardship motive. Using a time-lagged survey of 783 smallholder farmers in Ghana, analysed through partial least squares structural equation modelling (PLS-SEM), the findings strongly support these propositions. Technological growth mindset positively influenced intention to adopt GT-SA, with both climate-change worry and inter-generational stewardship motive amplifying this effect. A three-way interaction further revealed that the strongest relationship between technological growth mindset and adoption intention occurs when both moderators are high. These findings provide actionable insights for demand-side agricultural policy and extension programmes. Specifically, coupling skills development with climate-risk communication and stewardship messaging can enhance farmers' adoption intentions. This study offers the first empirical evidence that a technological growth mindset predicts intention to adopt green technologies, and that climate-change worry and inter-generational stewardship jointly intensify this relationship, based on time-lagged data from Ghanaian smallholders

Keywords: Climate-change worry, Green technology adoption, Inter-generational stewardship motive; Sustainable agriculture, Technological growth mindset

IMPACT OF LAND USE LAND COVER CHANGE ON LAND SURFACE TEMPERATURE IN THE OTI AND VOLTA REGION

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Urbanising landscapes in Ghana's Volta and Oti Regions are undergoing rapid land-use and land-cover (LULC) transitions with significant thermal implications for communities, crops, and supply-chain infrastructure. Using Landsat-derived LULC maps for 2015, 2020, and 2024, classified into built-up areas, agricultural land, forest, shrub, bare land, and water, and linked with land-surface temperature (LST) data, this study quantified compositional change and identified areas of pronounced warming. In Oti, vegetation cover (agricultural land, forest, and shrubs) declined by 608.22 km², from 59.65% in 2015 to 54.61% in 2024. Built-up areas expanded by 289.08 km² to 13.46%, and bare land increased by 320.14 km² to 17.54%, with the sharpest rise after 2020. In Volta, vegetation decreased by 960.61 km², from 45.98% to 36.15%, due to shrinking agricultural land and continued forest loss. Bare land expanded by 919.06 km² to 48.07%, while built-up areas grew modestly by 16.64 km² to 6.76%, producing 54.83% non-vegetated surfaces by 2024. Regions with greater impervious and exposed surfaces exhibited higher LST values. LST correlated strongly with the Normalised Difference Built-up Index (NDBI) ($r \approx +0.84$ in Oti, 2015; $r \approx +0.75$ in Volta, 2024) and negatively with the Normalised Difference Vegetation Index (NDVI), confirming vegetation's cooling influence. Priority intervention zones include peri-urban corridors and market belts experiencing accelerated vegetation loss and soil exposure. Targeted greening, riparian buffer restoration, and heat-aware siting of storage and aggregation facilities are recommended to reduce exposure for producers and traders. By integrating regional land-change accounting with spectral–thermal analysis, this study provides spatially explicit evidence to guide climate-smart urban planning and establishes a baseline for municipalities to monitor heat-risk reduction and resilience within evolving agri-urban systems.

Keywords: Agriculture, Climate, Land-surface temperature, Oti Region, Urbanization, Volta Region,

ASSESSING THE IMPACT OF GREEN INCLUSIVE LEADERSHIP ON GREEN PERFORMANCE OF STAR RATED HOTELS IN HO MUNICIPAL: THE MODERATING ROLE OF EMPLOYEE GREEN BEHAVIOUR

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This study examined the moderating role of employee green behaviour in the relationship between green inclusive leadership and the green performance of star-rated hotels in the Ho Municipality, Ghana. Using an explanatory research design, data were collected from 222 respondents selected through purposive sampling and analysed using structural equation modelling. The findings revealed that green inclusive leadership significantly enhances green performance. Employee green behaviour also had a direct and positive effect on green performance. However, no evidence was found to support its moderating effect on the relationship between green inclusive leadership and green performance. Based on these findings, the study recommends embedding sustainability within hotel organisational culture through green recruitment and performance management systems. Furthermore, leadership training should be institutionalised to strengthen inclusive and ecological competencies, while employee-focused green behavioural frameworks should be developed with key performance indicators (KPIs) aligned to sustainability objectives.

Keywords: Green inclusive leadership, Employee green behaviour, Green performance, Hotel employees

THE IMPACT OF ECO-LABELLING ON GREEN PRODUCTS ADOPTION: THE MEDIATING ROLE OF GREEN PERCEIVED VALUE

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Growing environmental concerns have intensified the need for sustainable consumption. However, consumer adoption of green products remains inconsistent despite the increasing prevalence of eco-labels. This study examines the mediating role of green perceived value in the relationship between eco-labelling and green product adoption. A quantitative, explanatory research design was employed, using data from 380 consumers collected through self-administered questionnaires and analysed using structural equation modelling. The findings indicate that eco-labelling significantly enhances both green perceived value and green product adoption. Green perceived value strongly predicts adoption and mediates the relationship between eco-labelling and adoption. The model explained 71.4% of the variance in green product adoption, demonstrating strong predictive power. The study contributes to the green marketing literature by establishing perceived value as a key psychological mechanism that strengthens the effectiveness of eco-labelling in promoting sustainable consumption. Practically, it recommends that policymakers and firms develop credible, transparent, and standardised eco-labelling schemes to build consumer trust and encourage green purchasing behaviour. Future research could extend the analysis across different regions, product categories, and demographic groups to enhance generalisability.

Keywords: Eco-labelling, Green product adoption, Green perceived value, Sustainable consumption, Ho Municipality

GROWTH AND YIELD RESPONSE OF OYSTER MUSHROOM TO THE INTER-ACTION OF COMPOSTING DURATION AND SPAWN APPLICATION RATE

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The study aimed to identify the optimal composting period and spawn application rate to enhance mycelial growth, yield, and product quality under sustainable cultivation. A 3×3 factorial experiment arranged in a completely randomised design (CRD) with five replications evaluated three composting durations [0 days (D0), 28 days (D28), and 51 days (D51)] and three spawn rates [16 g (S10), 11 g (S15), and 8 g (S20)]. Growth parameters included mycelial growth initiation (MGI), full colonisation time (FCT), spawn run rate (SRR), pinhead formation time (TPF), and days to first flush (DFF). Yield and morphological characteristics comprised number of fruiting bodies (NFB), biological and economic yields (BioY, EconY), biological efficiency (BE), and cap–stipe ratios (CSDR, CSWR). Composting duration and spawn rate exerted significant ($p \leq 0.05$) main and interaction effects on most growth and yield parameters. While the highest spawn rate (S10) accelerated only MGI, the intermediate rate (S15) significantly ($p < 0.05$) shortened FCT, TPF, and DFF. Shorter composting periods (D0, D28) significantly reduced FCT, increased SRR, and shortened DFF. Optimal yield was achieved with the D0S20 combination, producing 31% higher BioY, 33% higher EconY, and 33% higher BE than the control (D28S15). Extended composting (D51) combined with S10 or S15 produced thicker, larger, and heavier caps (18–40% increase) compared with the control. Overall, the findings indicate that shorter composting durations combined with moderate spawn rates improve yield and efficiency while reducing input costs by up to 50%, offering a sustainable strategy for enhanced mushroom cultivation.

Keywords: Biological Efficiency, Mycelial Growth, Spawn Rate, Optimal yield

SUITABILITY OF MORINGA, BAOBAB AND CASHEW APPLE POW-DERS AS SUPPLEMENTS FOR THE CULTIVATION OF OYSTER MUSHROOM

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This study evaluated three underutilised bioresources, moringa leaf powder (MLP), cashew apple waste powder (CAWP), and baobab leaf powder (BLP) as sustainable supplements to replace rice bran (RB) in oyster mushroom (Pleurotus ostreatus) cultivation. The objective was to assess their nutritional suitability, influence on mycelial growth, and effects on yield and quality attributes. Nutritional profiling of the supplements was conducted through proximate and mineral analyses, while growth and yield performance were evaluated using a completely randomised design (CRD). Mycelial growth parameters included spawn-run initiation (SRI), full spawn-run time (FSRT), spawn-run rate (SRR), time to pinhead development (TPD), and days to first flush (DFF). Yield and morphological indices comprised number of fruiting bodies (NFB), biological and economic yields (BioY, EconY), and biological efficiency (BE). The supplements differed significantly ($p \leq 0.001$) in nutrient composition. MLP, BLP, and CAWP exhibited significantly ($p < 0.05$) higher protein content and lower C:N ratios than RB, with MLP also containing elevated levels of K, Ca, Mg, and Na. All alternative supplements promoted faster mycelial colonisation, showing significantly shorter FSRT and higher SRR compared with RB. Yield analysis indicated that BLP significantly ($p < 0.05$) increased NFB, while BioY, EconY, and BE remained statistically comparable across treatments. Overall, the findings demonstrate that these bioresources can effectively substitute rice bran as nutrient-rich, eco-friendly supplements, supporting sustainable oyster mushroom production and circular bioresource utilisation.

Keywords: Bioresources, Mycelial colonisation, Nutritional profiling, Rural income, Spawn

SUSTAINABLE SUBSISTENCE AGRICULTURE IN RESIDENTIAL REAL ESTATE: EXPLORING THE ROLE OF VERTICAL GARDENS

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In the face of rapid urbanisation, escalating land values, and increasing food demand, integrating subsistence agriculture into residential architecture offers a promising pathway towards sustainable living. This study analyses the potential of incorporating vertical gardens into residential buildings to enhance environmental quality, energy efficiency, and economic, social, and aesthetic value for homeowners and the real estate industry. A mixed-methods approach was employed, combining qualitative open-ended interviews with quantitative analysis using structured questionnaires. The study examined various residential settings across urban, peri-urban, and rural contexts in Ghana. Findings indicate that, environmentally, vertical gardens improve air quality, reduce cooling demand and costs, and enhance climate adaptation. Economically, they contribute to increased household income, higher property values, and greater returns on investment, driven by consumers' willingness to purchase or rent properties with integrated vertical gardens. Socially, they foster community resilience, enhance building aesthetics, and promote environmentally conscious lifestyles. The study advocates for collaboration between agricultural experts and building professionals to promote the integration of vertical gardens into residential architecture. Such initiatives can strengthen sustainable subsistence agriculture, contribute to food security, and deliver wider ecological and socio-economic benefits. The research concludes by calling for policy incentives and participatory design approaches to support the mainstream adoption of vertical gardening in residential real estate.

Keywords: Building-integrated agriculture, Sustainable, Subsistence farming, Vertical gardens

INTER-GENERATIONAL STEWARDSHIP, ANTICIPATED REGRET, AND CLIMATE-CHANGE WORRY: A MODERATED-MEDIATION ACCOUNT OF SMALLHOLDERS' WILLINGNESS TO ADOPT WATER-SAVING IRRIGATION IN GHANA

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Evidence on technology adoption in smallholder agriculture remains predominantly focused on resource constraints and economic incentives, while values-based motives are less explored. Anticipated regret has rarely been examined as an affective pathway linking prosocial motives to adoption intentions, and the moderating role of climate-change worry in these relationships remains largely untested. Drawing on protection motivation theory and legacy-motive research, this study tested a moderated-mediation model using time-lagged survey data from 783 smallholder farmers in Ghana, analysed through partial least squares structural equation modelling (PLS-SEM). Results show that intergenerational stewardship significantly increased farmers' intention to adopt water-saving irrigation, partly by intensifying anticipated regret over non-adoption. Climate-change worry strengthened both the direct and indirect effects, producing a clear moderated-mediation process in which worry amplified stewardship-driven regret and, consequently, adoption intention. The findings elucidate how stewardship values translate into behavioural intentions through affective mechanisms, demonstrating that climate-change worry enhances these motivational pathways. The study advances theoretical understanding of values-driven technology adoption in smallholder agriculture and provides practical guidance for extension and policy design. Specifically, it highlights the importance of ethically framing communication around duties to future generations and emphasising consequence-focused messaging to promote the uptake of water-saving irrigation where climate concern is pronounced.

Keywords: Inter-generational stewardship, Anticipated regret, Climate-change worry, Moderated-mediation model, Water-saving irrigation, Smallholder farmers.

CIRCULAR ECONOMY PATHWAYS FOR THE UTILIZATION OF BANANA RESIDUES WITHIN THE AGRIFOOD CHAIN

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The banana agri-food chain in Ghana generates substantial volumes of organic residues that remain underutilised despite their potential for value recovery. The absence of structured waste management systems and limited awareness of circular economy principles contribute to waste accumulation and economic losses, particularly within the informal sector. This study explored how circular economy principles can be integrated into the banana value chain by examining waste generation, handling, and reuse practices among banana farm managers and sellers in the Ho Municipality. Adopting a qualitative exploratory design, five farm managers and fifteen banana sellers were purposively sampled and interviewed using semi-structured questions until data saturation. Transcribed data were thematically analysed following Braun and Clarke's six-phase framework. Three major themes emerged: sources of waste and their drivers, reuse and recovery practices, and willingness to engage in circular initiatives. Farm waste primarily comprised suckers, leaves, and fibres, while over-ripening due to poor storage, packaging, and transport caused retail losses. Some sellers repurposed waste for banana bread, fried banana balls (kaklo), or animal feed, while limited composting occurred on farms. Although awareness of circular economy principles was low, all participants expressed willingness to engage in structured recycling or reuse initiatives if incentives and training were provided. The study concludes that informal actors already practise micro-level circularity which, if formalised, could enhance economic value, reduce waste, and support environmental sustainability. Local authorities and extension services should promote circular economy awareness and small-scale processing innovations to advance Ghana's bio-circular transition

Keywords: banana value chain; circular economy; waste reuse; waste generation;sustainability

A CONSUMER BEHAVIOUR MODEL FOR SUSTAINABLE DIET ADOPTION: THE MEDIATING ROLE OF SUSTAINABLE AWARENESS

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This study examined the behavioural factors influencing sustainable diet adoption in Ghana, with particular emphasis on the mediating role of sustainability awareness. Drawing on the Theory of Planned Behaviour (TPB), the research explored how health consciousness, environmental concern, social norms, and perceived behavioural control predict sustainable dietary practices. A quantitative, cross-sectional survey was conducted among 336 participants using structured questionnaires, and data were analysed through Structural Equation Modelling. The results showed that perceived behavioural control had the strongest positive effect on sustainable diet adoption, both directly and indirectly via sustainability awareness. Social norms exhibited a negative direct influence but a positive indirect effect through awareness, indicating that greater awareness can mitigate negative social pressures. In contrast, health consciousness and environmental concern showed weak or inconsistent effects. The study concludes that strengthening sustainability awareness is essential for translating environmental and health values into sustainable dietary behaviours. These findings extend behavioural theory by clarifying the psychological mechanisms underpinning sustainable consumption and provide practical insights for promoting sustainable diets through education, policy initiatives, and community engagement.

Keywords: consumer behaviour, sustainable diet, sustainable awareness, dietary choices, sustainable diet adoption.

PHOSPHORUS -RICH PYROLYSIS CHAR FROM SEWAGE SLUDGE: A CIRCULAR APPROACH FOR AGRICULTURE, SOIL HEALTH, AND CARBON STORAGE

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Utilising nutrients and organic carbon from wastewater treatment can significantly advance sustainability and circular economy objectives. This study investigated the potential of pyrolysis char, produced at the Kleve-Salmorth sewage treatment plant in Germany, as a fertiliser and soil conditioner. Container trials evaluated its effects, alone and in combination with compost or vinasse, on plant biomass yield and phosphorus uptake. Pollutant analysis confirmed that the pyrolysis char met regulatory safety thresholds, supporting its classification as an organic NP fertiliser due to its phosphorus and nitrogen content. Phytotoxicity tests revealed no adverse effects on plant growth. The addition of pyrolysis char improved water retention in soils with low initial water-holding capacity and had a more pronounced positive impact on phosphorus-depleted soils. However, the performance of mixtures with compost or vinasse varied, indicating a need for further optimisation. An incubation experiment showed no significant effects on soil microbial biomass or long-term soil respiration. Carbon sequestration modelling estimated that approximately 80% of the carbon would remain in the soil after 100 years under German climatic conditions. Beyond agricultural use, pyrolysis char demonstrates potential for urban land management, mine site rehabilitation, and horticultural applications, thereby contributing to nutrient recycling and long-term CO_2 reduction.

ACCESS TO QUALITY MECHANISATION SERVICES AND GENDER INCLUSION IN THE VOLTA AND OTI REGIONS

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Access to quality mechanisation services remains a crucial factor in agricultural productivity, equity, and rural development, particularly in low- and middle-income countries. Mechanisation, the use of appropriate tools, equipment, and machines across the agricultural value chain can enhance efficiency, reduce labour demands, and promote sustainability. However, access to such technologies is uneven, with gender representing a major determinant. Women farmers, who constitute a significant share of the agricultural workforce, continue to face barriers to mechanisation services due to limited land ownership, inadequate financial resources, restrictive social norms, and exclusion from information networks and service markets. This research analyses the intersection of agricultural mechanisation and gender inclusion, highlighting the need for equitable access to high-quality and contextually relevant mechanisation services in Ghana's Volta and Oti Regions. Drawing on empirical evidence and policy analysis, the study demonstrates the effectiveness of gender-sensitive approaches, such as inclusive service delivery models, capacity-building initiatives, and participatory technology design in reducing existing disparities. It further argues that integrating gender equity into mechanisation strategies not only enhances productivity but also fosters social justice, empowerment, and resilience within rural communities. Ultimately, promoting inclusive access to mechanisation services is both a technological and socio-economic imperative for achieving sustainable and gender-equitable agricultural transformation

Keywords: Gender; mechanisation; inequalities; smallholder-farmers; VOWAN.

AUTOMATE THE BORING STUFF TO INCREASE AGRICULTURE PRODUCTION IN GHANA

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The automation of repetitive and labour-intensive operations in agriculture is rapidly transforming food production systems. As global interest in sustainable and efficient farming grows, automation technologies such as robotics, artificial intelligence (AI), precision sensors, and Internet of Things (IoT) platforms, have emerged as key tools for modernising traditional farming practices. This study explores the concept of automating the boring stuff in agriculture, focusing on the delegation of routine tasks such as soil analysis, sowing, irrigation, pest management, and production monitoring to intelligent automated systems. Automation not only addresses labour shortages by reducing dependence on manual work but also enhances accuracy, scalability, and data-driven decision-making. The integration of AI-driven analytics with autonomous machinery improves resource efficiency, mitigates environmental impacts, and increases overall productivity. Despite these advances, several challenges impede widespread adoption, including high implementation costs, limited technical capacity among farmers, and concerns regarding data ownership and interoperability. Adopting a multidisciplinary perspective, the study examines the technological, economic, and social dimensions of agricultural automation, arguing that automating routine tasks does not diminish the farmer's role but redefines it. Shifting human effort from manual labour to strategic oversight and innovation within Ghana's agricultural context. Ultimately, automating repetitive farm tasks represents a critical step towards a smarter, more sustainable, and resilient agri-food system.

Keywords: Automation; Climate Change; Crop Yield; Resource Utilisation; Sensors.

ASSESSMENT OF FARMERS' PERCEPTION ON THE EFFECT OF CLIMATE CHANGE IN IGABI LGA KADUNA STATE, NIGERIA

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This study assessed farmers' perceptions of the effects of climate change in the Igabi Local Government Area of Kaduna State, Nigeria. A multistage sampling technique was used to obtain a sample of 71 respondents. Primary data were collected through structured questionnaires and analysed using descriptive statistics, including frequency distribution, percentage, and mean scores. Results revealed that the majority of respondents were male (76.1%) and married (64.8%), with 88.7% having received some form of education. The mean age of household heads was 48 years, with an average household size of 10 persons. The mean farming experience and annual farm income were 31.34 years and ₦280,288.73, respectively. Most farmers demonstrated good knowledge of climate change, recognising indicators such as rising temperatures, increased rainfall intensity and variability, and the occurrence of extreme weather events, including floods and droughts. Respondents identified major perceived causes of climate change as bush burning (85.9%), deforestation (81.7%), chemical use (73.2%), community disobedience to God (69%), pollution (69%), and fossil fuel combustion (47.9%). The most significant perceived effects were declines in crop yield (x = 4.47), reduced soil fertility (x = 4.35), higher food crop prices (x = 4.03), and increased flooding during the rainy season (x = 3.70). Common adaptation strategies included the use of fertiliser or animal dung to improve yield (x = 4.43), irrigation farming (x = 3.68), and planting drought-resistant crops (x = 3.64). Overall, the findings indicate that farmers possess substantial awareness of climate change, although some perceptions remain influenced by traditional and religious beliefs. The study recommends that climate change interventions incorporate local beliefs while enhancing scientific understanding through education. Farmers should also be encouraged to minimise deforestation and bush burning to mitigate climate change in the study area.

Keywords: Climate Change, Assessment, Farmers' Effects, Nigeria.

PHENOL-PECTIN-STARCH COMPOSITE BIOMATERIAL FOR EDIBLE FOOD COATING

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The use of synthetic chemical agents in food preservation has been associated with various health concerns. This has prompted the search for natural and edible biomaterials with bioactive properties for use in food preservation and packaging. The present study focused on developing and evaluating an edible composite film prepared from Tetrapleura tetraptera polyphenols (TTP), okra pectin (OP), and corn starch (CS). Corn starch was extracted using water, TTP through ethanolic maceration, and OP via ethanolic precipitation. Films were formulated with (CS) and without (NCS) and tested for antioxidant activity (AA), total phenolic content (TPC), and antimicrobial activity (AMA). Thicknesses (0.47 and 0.16 µm), tensile strength (0.20 and 1.87 N/mm²), transparency (1.40 and 0.55) and moisture content (74.30 and 59.03%) were recorded for CS and NCS films respectively. Biodegradability tests showed weight losses of 85.45% and 100.00% after 2 h, while the swelling index were 30.00 and 57.40% for CS and NCS films, respectively. Degree of esterification (DE) of 38.18% and 3.55% protein showed that low-methoxyl (LM) pectin of high purity was extracted. TPC (14.29 and 18.06 mg GAE/g) and AA (55.13 and 67.49%) respectively recorded for CS and NCS films showed significant differences ($P < 0.05$). Minimum inhibitory concentrations (MIC) for Salmonella typhi and Staphylococcus aureus were 7.25 and 9.00 mg ml-1 and 3.50 and 6.25 mg ml-1 for CS and NCS, whereas minimum bactericidal concentrations (MBC) were 13.50 and 16.00 mg ml-1 and 9.05 and 12.25 mg ml-1, respectively. When used as an edible coating on fresh fruits, the CS film extended the shelf life of tomatoes, mangoes, and apples by up to 7, 10 and 14 days compared to control. NCS film extended shelf life of the same fruits better than CS film by 13, 18 and 23 days, respectively ($P < 0.05$). These findings indicate that bioactive edible films developed from TTP and OP, with or without CS, can serve as a promising biodegradable alternative for enhancing the quality and shelf life of fresh fruits.

Keywords: Edible film; polyphenols; okra pectin; corn starch; antimicrobial activity; fruit coating

THE ROLE OF HTU IN DRIVING GHANA'S RENEWABLE ENERGY TRANSITION: IMPLICATIONS FOR SUSTAINABLE AGRICULTURE AND TRANSPORTATION

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Ho Technical University (HTU) is spearheading Ghana's transition towards renewable energy through innovative projects in sustainable transportation and solar-powered irrigation. Central to this drive is the Solar-Powered Irrigation System (SPIS) Training Project and the establishment of the Solar Technology Applications Resource Centre (STAR-C). These initiatives reflect HTU's strategic role in advancing solar energy applications to support agricultural productivity, reduce greenhouse gas emissions, and strengthen national energy resilience. The SPIS project, funded by GIZ, empowered smallholder farmers, solar technicians, and financial credit officers with practical skills in installing and managing solar irrigation systems. Beyond agriculture, HTU is advancing the development of solar-powered tricycles to promote clean and affordable transportation. While these efforts align with Ghana's target of achieving 10% renewable energy in the national energy mix by 2030, challenges remain in financing, public awareness, regulatory frameworks, and programme sustainability. However, as Ghana's National Certification Focal Institution for Renewable Energy and host of STAR-C, HTU is well positioned to scale up training, certification, and research to accelerate the renewable energy transition.
Keywords: Climate change mitigation, Renewable energy transition, Solar-powered irrigation, Solar-powered tricycles, STAR-C.

GENOTYPIC VARIATION IN PHYSIO - ULTRASTRUCTURAL AND HORMONAL REGULATION OF PHOTOSYNTHETIC EFFICIENCY IN RICE FLAG LEAVES UNDER DIFFERENTIAL NITROGEN SUPPLY

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Premature leaf senescence shortens the photosynthetic lifespan of cereal crops, thereby constraining yield potential. Although substantial progress has been made in understanding senescence in rice, genotypic variation in physio-ultrastructural and hormonal regulation under nitrogen (N) stress remains poorly characterised. This study examined a premature senescence flag-leaf (psf) mutant and its wild type (WT), grown hydroponically under low (LN), medium (MN), and high (HN) N supplies to investigate the effects of N availability on leaf physiology, chloroplast ultrastructure, and hormonal balance.Under LN conditions, SPAD values and net photosynthetic rate (Pn) were significantly lower than under MN and HN, following similar temporal patterns to those of photosystem activity and pigment content. Compared with the WT, the psf mutant displayed markedly reduced photosynthetic parameters, including transpiration rate and stomatal conductance, with sharper declines at harvest and elevated relative conductivity. Transmission electron microscopy revealed that LN induced chloroplast deformation, thylakoid de-stacking, and reduced grana density, particularly at the harvesting stage. Hormonal profiling showed that LN and psf mutation jointly disrupted cytokinin–ABA equilibrium, characterised by decreased cytokinin and elevated abscisic acid and ethylene levels, which promoted chloroplast degradation and premature senescence. Notably, the psf mutant exhibited comparatively higher chlorophyll retention and photosystem efficiency than the WT at specific stages, suggesting compensatory hormonal cross-talk. Overall, the study establishes a physiological and hormonal framework linking nitrogen deficiency to ultrastructural and photosynthetic alterations in rice flag leaves, offering mechanistic insights to guide breeding for N-efficient and senescence-resilient genotypes under nutrient-limited conditions.

Keywords: Cytokinin–ABA interaction; Ethylene; Flag Leaf; Nitrogen Deficiency, Premature Senescence, Rice

SIMULATING CLIMATE CHANGE FACTORS EFFECT ON STABILITY OF SIZE-BASED MODELS OF FISH ECOSYSTEMS

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Climate change is transforming marine ecosystems at an unprecedented pace, posing serious challenges to the sustainability of global fisheries. Rising sea temperatures, altered ocean circulation, and shifting prey availability are disrupting ecological balances and reshaping species interactions within marine food webs. This study investigates the stability of size-based models in fish ecosystem frameworks, which emphasise how body size governs feeding relationships, population dynamics, and energy transfer across trophic levels. Although such models have been instrumental in elucidating ecological processes, their sensitivity to climate-driven disturbances remains underexplored. Employing advanced simulation techniques, this research examines how key climate variables influence the stability of size-based ecosystem models. By integrating data on species interactions, environmental parameters, and future climate projections, the study quantifies changes in the distribution, abundance, and composition of fish populations. Particular attention is paid to cascading effects on predator–prey dynamics, community structure, and long-term ecosystem resilience. The findings are expected to enhance understanding of how climate change modifies marine ecological systems and their functional stability. Furthermore, the research provides fisheries managers and conservation practitioners with science-based insights to inform adaptive strategies for sustaining marine biodiversity and ensuring the long-term viability of fisheries. By bridging climate science and ecological modelling, this study strengthens predictive capacity and supports efforts to mitigate the ecological consequences of a rapidly changing ocean

Keywords: Climate Change; Food webs; Size-based; Predator – prey

QUALITY ATTRIBUTES OF NGOPA AND ZOMI ALONG THE PALM OIL VALUE CHAIN

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Quality evaluation of palm oil is essential for maintaining its nutritional value and ensuring effective processing. Zomi and Ngopa palm oils are integral to the Ghanaian food system, with quality influenced by postharvest handling along the value chain. This study assessed the physico-chemical, microbiological, and sensory attributes of palm oil from three artisanal mills in Pramkese, Subi, and Abompe. Standard AOAC and consumer test methods were employed. Significant differences ($p < 0.05$) were observed among oils for free fatty acids, pH, iodine, and peroxide values, while moisture (0.066–0.097%) and saponification (281.903–288.915 mg/g) showed no significant variation ($p > 0.05$). Ngopa oils exhibited greater redness ($a^* = 7.820$) and yellowness ($b^* = 16.100$) than Zomi oils. Bacillus spp. were the predominant bacteria, while Candida spp. and Saccharomyces spp. were the dominant yeasts. The most frequent moulds were Aspergillus and Penicillium spp. Bacterial counts ranged from 1.2×10^3 to 5.6×10^4 CFU/mL, and yeast and mould counts from 5.1×10^2 to 3.8×10^4 CFU/mL. Sudan IV tests indicated that all mill samples contained levels below detection (<0.01 mg/kg). However, tracer studies revealed post-processing contamination, with Subi oil sold at Agbogbloshie market showing 0.065 mg/kg. Sensory evaluation showed significant differences ($p < 0.05$) in preference between Ngopa and Zomi oils. The findings underscore the need for improved processing practices, and enhanced monitoring and control measures along the palm oil value chain, especially during marketing and distribution.

Keywords: Palm oil, Artisanal mills, Physico-chemical properties, Sudan IV, Microbial contamination, Sensory evaluation

DEVELOPMENT OF LACTIC ACID BACTERIA & YEAST STARTER CULTURES FOR SAFETY AND IMPROVED SENSORY PROPERTIES OF ALIHA

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Aliha, a maize-based spontaneously fermented beverage, often exhibits quality inconsistencies. This study aimed to develop starter cultures to improve its fermentation process and quality parameters. Limosilactobacillus plantarum, Streptococcus diacetylactis, and Pichia kudriavzevii were selected and evaluated for acidity, viability in combination, and sensory properties. The three strains co-existed effectively within 24 hours, with a sharp pH decline from 5.0 to 3.0 during the first 24 hours and a gradual decrease to 3.5 by 48 hours. Total titratable acidity increased markedly (0.28–2.11), with the combination of Lb. plantarum, S. diacetylactis, and P. kudriavzevii showing the highest acidity (2.11) at 24 hours. P. kudriavzevii exhibited the highest viability (61.67 cfu/ml) when combined with Lb. plantarum and S. diacetylactis. All microbial counts were within permissible limits, with Lb. plantarum + P. kudriavzevii fermented aliha being the safest. Sensory evaluation indicated that the 24-hour starter-culture-fermented aliha was preferred to both the spontaneous and 48-hour fermentations. Panelists rated the taste and aroma of S. diacetylactis + P. kudriavzevii and the overall acceptability of S. diacetylactis fermented aliha highest. The elevated acidity observed is desirable, as it enhances the safety, shelf life, and organoleptic qualities of the final beverage.

Keywords: Beverage, Starter culture, Food safety, Sensory properties, Microorganisms

MICROBIOLOGICAL RISK ASSESSMENT OF SOME MAJOR READY-TO-EAT FOODS SOLD IN THE VARIOUS INSTITUTIONS IN THE HO MUNICIPALITY, GHANA

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Poor food hygiene practices contribute to microbial contamination, posing serious health risks to consumers and the public. This study assessed the microbiological risks associated with major ready-to-eat foods prepared and consumed in Ghana. Food samples were collected from selected institutions, including health centres and basic schools, in Ho township and subjected to microbiological analyses. Tests conducted included aerobic plate count (APC), total coliform count (TCC), faecal coliform count (FCC), Enterobacteriaceae, fungi, Escherichia coli, Staphylococcus aureus, and Salmonella species, using standard plate count procedures. Selected colonies were purified and identified through Gram staining and biochemical tests following the methods of MacFaddin (2000). Results showed that all samples were free from Salmonella contamination, while soya kebab samples were also free from E. coli. A total of 243 microbial isolates were identified, including E. coli (29), S. aureus (44), Bacillus species (68), Pseudomonas species (15), Proteus species (21), and fungi (66). Among the foods tested, soya kebab was the most contaminated (29.6%), followed by banku (14.0%), while yakayeke was the least contaminated (8.2%). The study recommends that all food handlers, particularly those involved in the preparation and sale of ready-to-eat foods, should be adequately trained, licensed, and subjected to continuous monitoring and supervision to ensure consumer safety.

Keywords: Foods, Contamination, Microorganisms, Pathogens, Hygiene Indicator

CLIMATIC FACTORS EFFECTS ON GROWTH OF VEGETABLES IN THE VOLTA REGION OF GHANA

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This study examined the effects of climatic factors on the growth of vegetables, focusing on a leafy vegetable (108 lettuce plants) and a fruiting vegetable (67 cucumber plants). A randomised block design with three treatments and three replications was employed at the Ho Technical University experimental field. Multivariate analysis of variance (MANOVA) was used to determine significant differences in growth among treatments, followed by t-tests comparing treatments with controls. A multinomial logit model assessed the relationship between treatments and growth parameters, while propensity score matching (PSM) estimated the effects of temperature, visible light, wind speed, and UV radiation on plant growth. The results indicated significant differences in plant height, number of leaves, and fruit length in cucumber across treatments, whereas lettuce showed differences only in the number of leaves. The NPK treatment produced mixed effects in lettuce: treated plants exhibited fewer leaves and shorter height than the control but had a larger leaf area. Urea treatment had no significant effect on lettuce growth but significantly increased the number of flowers and fruit girth in cucumber while reducing leaf number and fruit length. Temperature, wind speed, visible light, and UV radiation significantly influenced the growth of both vegetables. The study concludes that managing climatic factors is critical for optimising vegetable growth in tropical environments. It recommends the use of appropriate shading or greenhouse systems to enhance the quality and consistency of vegetable production.

NARROWING THE FLOW OF MATERIALS IN UNIVERSITY EVENTS AND ACTIVITIES IN GHANA: CIRCULAR ECONOMY OPPORTUNITIES ON CAMPUSES

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Universities in developing countries can play a leading role in advancing the transition to a circular economy, serving as practical exemplars and models for circular cities. However, unsustainable material consumption remains prevalent in the organisation of university events and programmes, including those ironically funded by donors promoting sustainability. This policy brief examines how universities and higher education institutions (HEIs), which often share structural and operational similarities with municipalities, can demonstrate meaningful change through the practical application of circular economy principles. It argues that, due to their unique influence and institutional structures, universities in developing countries provide an ideal context for piloting policies and regulations that support a broader transition towards circularity. The brief contends that unsustainable material use undermines progress towards key Sustainable Development Goals (SDGs) in developing countries, while universities are strategically positioned to drive circular innovation and practice. It proposes that low-cost, campus-based circular strategies can catalyse wider systemic transformation. The paper advocates the adoption of simple, cost-effective measures such as regulations discouraging unsustainable practices, incentives promoting sustainable choices, mandatory information disclosure, and the integration of institutional learning. Collectively, these measures can foster sustainable and vibrant university environments that serve as models for broader societal adoption of circular economy principles.

INDIGENOUS FARMERS' PERCEPTIONS & ADAPTATION STRATEGIES IN CROP PRODUCTION ON CLIMATE CHANGE: A CASE STUDY OF THE HO MUNICIPALITY

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This study examined indigenous farmers' perceptions of climate change, its perceived effects on crop yields, and the strategies employed to adapted in crop production in response to climate change in the Ho Municipality. A total of 115 indigenous farmers were selected from a population of 230 using convenience sampling. Quantitative data were collected through structured questionnaires and analysed using percentage distributions and chi-square tests, while qualitative data from interviews provided contextual insight. Results showed that 84.3% of respondents were aware of climate change, identifying decreased rainfall (20.8%), delayed rainfall (19.2%), increased temperature (17.5%), and unpredictable weather patterns (17.0%) as major indicators. About 73.9% reported reduced yields attributed to climate change; however, no significant relationship was found between climate change awareness and yield reduction ($\chi^2 = 0.43$, $p = 0.512$). Common adaptation strategies included adjusting planting dates (60%), using organic manure (57.4%), and diversifying income sources (58.3%). Approximately 59.1% of farmers rated these strategies as moderately to very effective. Factors influencing adaptation choices included cost, access to information, peer influence, and land availability. The study recommends strengthening agricultural extension services, enhancing farmer education, and implementing supportive policies to promote affordable, context-specific adaptation measures. Integrating indigenous knowledge with scientific practices is essential for sustaining crop productivity under changing climatic conditions.

Keywords: Indigenous farmers, Crop production, Climate change

INNOVATIVE USES OF BANANA FRUIT IN WASTE MANAGEMENT SOLUTIONS.

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This study explored innovative applications of banana fruit waste as a sustainable solution to organic waste management and its environmental impact. The primary objective was to develop methods for transforming banana by-products into value-added products, thereby supporting circular economy principles. An experimental design was employed, involving banana peel extraction, soap production, and fertiliser formulation. Laboratory analyses assessed the effectiveness of banana extracts as soap ingredients and nutrient sources for plant growth. Results showed that banana-based soap exhibited antibacterial properties suitable for various skin types, with 85% of users expressing satisfaction with its quality. Fertiliser trials revealed a 30% increase in plant growth compared with untreated samples. The findings demonstrate the potential of banana waste to generate sustainable consumer products and organic fertilisers, reducing environmental pollution and promoting waste valorisation. The study recommends increasing awareness of banana waste utilisation among farmers and consumers, encouraging local production of banana-based products, and integrating such innovations into community waste management programmes. Future research should focus on optimising production processes and exploring further industrial applications of banana by-products to enhance sustainability and economic value.

Keywords: Banana Waste, Organic Fertilizer, Sustainable Solutions, Waste Management.

SUSTAINABLE VALUE CHAINS: AN ASSESSMENT OF NATURALLY PRESERVED MILLET AND AMARANTHUS INSTANT PORRIDGE

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This study developed a naturally preserved instant porridge made from pearl millet and amaranth, aimed at achieving high nutritional value and consumer acceptance. The objective was to promote sustainable value chains for indigenous crops through eco-friendly processing techniques, thereby reducing import dependence and diversifying local food products. Four porridge formulations were prepared with varying millet-to-amaranth ratios: MAB0 (100% millet, control), MAB1 (9:1), MAB2 (8:2), and MAB3 (7:3). Twelve untrained panellists evaluated the samples using a triangle test and a nine-point hedonic scale. MAB2 achieved the highest acceptability score (75.33%), followed by MAB1 (12.77%) and MAB3 (11.9%). Proximate analysis revealed that MAB2 had the highest carbohydrate (64.46%) and protein (16.03%) contents, while MAB3 recorded the highest fat content (6.01%) and MAB1 the highest ash content (2.10%). The processing methods did not significantly affect mineral levels (calcium, phosphorus, potassium, and magnesium), although the increased water absorption capacity of amaranth led to some loss of soluble vitamins. The findings demonstrate the potential of millet–amaranth blends to produce nutritious, acceptable, and sustainably processed instant porridges. Further research is recommended to standardise production practices and optimise processing methods for large-scale, environmentally sustainable food development.

Keywords: Natural preservation, Sustainable production, Value chain

URBAN AND PERI-URBAN AGRICULTURE FOR FOOD SECURITY

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Rapid urbanisation has intensified the challenge of ensuring food security in densely populated cities, particularly in developing countries such as Zimbabwe, where low-income households are most affected. Urban and peri-urban agriculture (UPA) has emerged as a viable strategy to mitigate urban food insecurity by producing food within or near city boundaries. This study explores the role of UPA in enhancing food security in Harare, Zimbabwe. A mixed-methods approach was employed, involving a randomly selected sample of fifteen households, complemented by case studies and semi-structured interviews with key stakeholders. These methods provided insights into agricultural practices, challenges, and opportunities for expanding UPA initiatives. Findings reveal that UPA significantly contributes to household food security by improving access to fresh, nutritious produce and generating supplementary income, particularly in economically marginalised communities. The study highlights the potential of conservation farming (Pfumvudza/Intwasa) as both a climate adaptation strategy and an innovative response to food shortages. Many households depend on small-scale farming to supplement diets and reduce food expenses. However, UPA in Harare faces challenges such as limited access to land and the absence of formal policy frameworks to support urban farming. The study recommends integrating UPA into urban planning as a legitimate component of city food systems, supported by targeted policies and resources for urban farmers. Strengthening UPA can enhance sustainable urban development and improve long-term food security in Zimbabwe and similar contexts.

Keywords: Urban, Pre- urban, Food security, Agriculture

INTERNATIONAL TOURISTS' ENGAGEMENT WITH INDIGENOUS GHANAIAN CUISINES: EVIDENCE FROM THE VOLTA REGION

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Food tourism is increasingly recognised as a vital pathway for promoting sustainable development and cross-cultural understanding. In Ghana, indigenous cuisines embody rich cultural heritage and present opportunities for economic empowerment, environmental stewardship, and community engagement. However, limited empirical research has explored how international tourists experience and engage with these cuisines. This study examined the behavioural and psychological factors influencing tourists' engagement with indigenous Ghanaian foods. Data were collected from 250 international tourists and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings indicate that food neophobia, variety seeking, and social influence significantly predict food choices, while perceptions of hygiene and safety indirectly affect behaviour through food acceptance. Food acceptance emerged as a key mediator linking individual predispositions to satisfaction, loyalty, and revisit intentions. The study contributes to the growing body of literature on food tourism by situating culinary engagement within the context of the Sustainable Development Goals (SDGs 2, 8, 12, 13, and 17). It demonstrates how indigenous cuisines can foster responsible consumption, inclusive economic growth, and sustainable partnerships. The insights offer practical implications for tourism policymakers, hospitality managers, and local entrepreneurs seeking to position Ghana as a leading culinary tourism destination in Sub-Saharan Africa.

CLOSING THE LOOP. AN INNOVATIVE CIRCULAR STRATEGIES TO SLASH FOOD LOSS AND WASTE ACROSS SUPPLY CHAINS

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In an era marked by climate urgency, resource scarcity, and persistent food insecurity, reimagining food systems through the principles of sustainability and circularity has become imperative. Food loss and waste (FLW) account for nearly one-third of global food production, representing not only a severe economic inefficiency but also a major contributor to greenhouse gas emissions and biodiversity loss. This paper advances the discourse on circular economy interventions aimed at minimising FLW across food production and supply chains by transforming waste into value and inefficiency into innovation. The study synthesises empirical research exploring circular solutions such as regenerative agriculture, smart logistics, surplus food redistribution, biodegradable packaging, and food valorisation for secondary markets. It further examines scalable models and policy frameworks that support closed-loop food systems and promote multi-stakeholder collaboration involving the private sector, government, and local communities. Particular attention is given to studies integrating technology-driven approaches such as blockchain, the Internet of Things, and artificial intelligence in monitoring and reducing food waste, while emphasising socio-economic inclusivity. Therefore, by spotlighting circular innovations in food systems, inform transformative policies and catalyse public-private collaboration for a zero-waste future. The research will significantly contribute to global sustainable development goals, particularly SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).

Keywords: Food loss and waste, Circular economy, SDGS.

FROM CRISIS TO CIRCULARITY: TRANSFORMING FOOD SYSTEMS FOR CLIMATE RESILIENCE IN A WARMING WORLD

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The climate crisis is an immediate and accelerating threat disrupting the global food system from production to consumption. Rising temperatures, erratic rainfall, and increasing extreme weather events are undermining food security, threatening livelihoods, and depleting the natural resources on which agriculture depends. In this context, the future of food must be redefined through the dual lenses of sustainability and circularity. This paper employs a hybrid methodology combining conceptual, systematic, and empirical analyses to investigate adaptive strategies that enhance climate resilience while decarbonising food systems. The study explores transformative approaches such as climate-smart agriculture, precision farming, vertical agriculture, and controlled-environment cultivation, evaluating how these innovations reduce carbon footprints, optimise resource use, and foster regenerative loops within food systems. Bibliometric mapping is used to identify research hotspots and knowledge gaps in integrating climate adaptation and circular economy principles. Empirical case studies from climate-vulnerable regions demonstrate how scalable models of low-emission food production, sustainable land governance, and community-led innovation generate both environmental and socio-economic benefits. The paper further examines policy and investment frameworks required to transition from linear, waste-intensive systems to regenerative, circular agri-food networks. In proposing a circular food economy paradigm, the research presents a compelling roadmap for stakeholders, governments, development partners, researchers and agribusinesses to work collectively in building climate-proof, equitable food systems. The urgency to act is undeniable, but so is the opportunity: to turn climate risks into innovation hubs, food insecurity into resilience, and waste into wealth.

Keywords: Climate change, Smart agriculture, Sustainable land-use, Food security, Climate adaptation

EXPLOIT POTENTIAL OF URBAN AGRICULTURE : SUCCESSFUL STRATEGIES FOR FOOD SECURITY AND POVERTY REDUCTION IN AFRICAN CITIES

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By 2030, an estimated 50% of Africa's population will live in cities, intensifying pressure on limited urban resources. Urban and peri-urban agriculture (UPAF) offers a viable solution to challenges related to food security, poverty, unemployment, and environmental degradation. This study adopts a case study approach, examining UPAF models in New York, Singapore, and the Netherlands to identify effective strategies for enhancing sustainability and food availability in African cities. Findings reveal that despite severe land constraints, Singapore achieves high agricultural productivity through comprehensive urban farming policies and investment in high-tech systems, targeting 30% local food production. The Netherlands has made substantial progress through innovative agricultural technologies, while New York supports rooftop farms via zoning regulations, financial incentives, and technical assistance. These cases demonstrate how policy support, innovation, and investment drive UPAF success. The study concludes that African governments should intensify efforts to promote high-tech farming methods such as vertical farming, hydroponics, and aquaponics to maximise yields per unit area. Training and capacity-building initiatives are also essential to equip urban farmers with relevant technical skills. Furthermore, improving market access and developing value chains can enhance income opportunities for farmers. The study recommends that African policymakers establish supportive frameworks, including tax incentives and enabling regulations, to integrate UPAF into urban planning. Addressing barriers such as policy resistance, limited technical expertise, and resource constraints will be crucial to achieving sustainable urban development and improved food security across African cities.

Keywords: Urban agriculture, Food security, Sustainable development

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