

Issue 2 of
2024

October
2024



PAN AFRICAN SOCIETY FOR AGRICULTURAL ENGINEERING

NEWSLETTER



PAN AFRICAN SOCIETY FOR
AGRICULTURAL ENGINEERING

Promoting and advancing the profession of
Agricultural Engineering in Africa!



ISSUE 2 OF 2024

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President's Message

A warm welcome to all readers of this edition of our Newsletter.

In achieving the core aspirations and goals of Agenda 2063: the Africa we want, doing the sayings of an Indian philosopher, Mahatma Gandhi which says: "the future depends on what we do in the present" is the only way to go as we approach the last five years set for the attainment of the 17 Sustainable Development Goals (SDGs), to which the African Agenda is intrinsic. With this, I welcome you all again to this edition of our quarterly newsletter, the PASAE Newsletter.

In this bumper package, we shall be ushering-in the sixth PASAE Annual International Conference with exciting highlights of what lays ahead this October. Incidentally, the Conference/Symposium coincides with the 60th anniversary of our co-host, the South African Institute of Agricultural Engineers (SAIAE). It is scheduled to take place at the Houw Hoek hotel, in the scenic Western Cape Province of South Africa between 23 and 25 October, 2024. Detailed information on the conference registration, speakers, travels, tours and associated activities can be found on the conference website, but this edition gives you a preview. Similarly, we have presented in this edition, information on the South African Committee on Large Dams (SANCOLD) conference with the theme: Water preservation a critical requirement for sustainability, scheduled for 6 to 8 November at the Wanderers Club Johannesburg, South Africa. Abstract submission deadline is on October 21, 2024. There is other information from the southern African region such as the Pack house optimization and agro-processing summit in Cape town also in November.

President's Message (Cont'd)

In other regions of Africa, specifically Nigeria, the President, Bola Ahmed Tinubu GCFR inaugurated a committee on the implementation of Livestock reforms to address obstacles to agricultural productivity, which is part of the Renewed Hope Agenda of his administration aimed at increasing food security for self-sufficiency in the country. We also chronicled few outstanding achievements of some of our members who distinguished themselves within the year. Dr. Mobolaji Omobowale was elected as the President of the African Network Group of the American Society of Agricultural and Biological Engineers (ANGASABE) for a period of two years in the first instance. In addition, our editor-in-chief, Professor Christopher Akinbile's innovation on soil's moisture and temperature measuring device has received the Federal Government of Nigeria (FGN)'s attention, protected by patent and celebrated by his institution, the Federal University of Technology Akure (FUTA).

The editorial team also highlighted my admission to the prestigious Fellowship of the International Academy of Agricultural and Bio-systems Engineering (FiAABE). The conferment took place at the Congress of International Commission of Agricultural and Bio-systems Engineering (CIGR) in Jeju Island, South Korea earlier in the year. Also highlighted was the 55th Inaugural Lecture of Michael Okpara University of Agriculture delivered by another outstanding Agricultural Engineer, Professor Kayode Joshua Simonyan, titled; "Unveiling the wedlock of endogenous technologies and sustainable economic growth". The edition ends with information on the SIAAE Agricultural Engineering podcast, the annual membership dues and our contact information.

President's Message (Cont'd)

I heartily present and commend this exciting edition of the Newsletter to readers and researchers. Please savour, enjoy the edition and add it to your knowledge repository. I am really excited about the 6th PASAE Conference and the SIAE 60th Anniversary Symposium coming up in the 3rd week of next month, and look forward to seeing you there. I am told that an unforgettable experience awaits you.

Finally, on behalf of the PASAE Council and the entire membership, I thank and commend the Editorial Crew of PASAE Newsletter for putting together this exciting bumper edition.

Happy reading.

Professor. Michael Faborode
FIAABE, FAEng, FNSE, FAEEA, FNIAE
President, PASAE



SAIAE and PASAE International Symposium 2024

Third Announcement.



The South African Institute of Agricultural Engineers, (SAIAE) and the Pan African Society for Agricultural Engineering, (PASAE) are proud to invite interested parties to its International Symposium. As mentioned in the previous announcement, this year's edition will be coinciding with the SAIAE's 60th Anniversary, which will ensure a milestone Conference. The SAIAE and PASAE International event will be PASAE's 6th International Conference.

The International event will take place from 23 – 25 October 2024 at the Houw Hoek Hotel, in the scenic Western Cape province of South Africa. This announcement highlights and provides details on the technical tours that will be available for delegates to attend at the Symposium, keynote speakers, and revised student and pensioner virtual costs and more!

[SAIAE Symposium Website Link.](#)



SAIAE and PASAE International Symposium Technical Tours

The SAIAE and PASAE International Symposium will see the event offer a varied selection of technical tours for delegates to attend on the last day of proceedings (25 October 2024).

This year, we will have technical tours going to various sites where delegates will be treated to on-site experiences, which will involve in-depth and relevant insight into the operations of the various tours on offer. Delegates will be able choose 2 tours before the final wine tasting event.

Technical Tour One: Paul Clüver Family Wines

Paul Clüver Family Wines is a leading producer of world-class noble varietal wines, specializing in Pinot Noir and Chardonnay while also being a showcase of Cape winelands conservation. This is the result of Clüver's pioneering spirit in agriculture and conservation.

Technical Tour Two: Kromco

Kromco is one of the largest deciduous fruit packing facilities in South Africa and is situated in the Elgin/Grabouw area about 60km from Cape Town International Airport. They specialize in the packing, grading, storage and marketing of quality apples and pears for both the local and international markets. The Kromco brand is well recognized and respected in the global fruit industry. Kromco's facility includes some of the latest presorting technology available for apples, allowing for better consistency.



SAIAE and PASAE International Symposium Technical Tours (Cont'd)



Technical Tour Three: Two-A-Day Packing Facility

Two-A-Day Packing Facility is one of the leading fruit growing, packing and marketing companies on the African continent comprising of more than 50 farms owned by the principle shareholders. Total area under fruit exceeds 3 300 hectares. Total production, including processing, equates to over 200 000 tons per annum. They play a leading role in the growing, marketing and technological fields and is widely recognized as having disciplined membership, committed to producing high quality fruit employing sound environmental, social and ethical practices.

Technical Tour Four: Palmiet Pumped Storage Scheme

The Palmiet Pumped Storage Scheme consists of two 200 Megawatt turbine units. The catchment area of the Palmiet River could potentially supply sufficient water for four more dams in addition to Kogelberg. The Palmiet scheme acts not only as a hydroelectric pumped storage scheme, but also as a water transfer scheme.

The scheme comprises of two dams, the lower Kogelberg Dam on the Palmiet River south of Grabouw and the upper Rockview Dam on the watershed between the Palmiet and Steenbras Rivers. The scheme is a forerunner in environmental engineering.

All technical tours will take place on the morning of Friday 25 October 2024 and are included in the full delegate registration cost. Places for each technical tour are limited and will be allocated on a first come first served basis. Kindly note that more details and information pertaining to the booking of the technical tours will be made available as the date approaches.

SAIAE and PASAE International Symposium Keynote Speakers

We are extremely delighted to announce to you the six (6) keynote speakers for the upcoming SAIAE and PASAE International Symposium. They will be delivering inspiring keynote addresses on contemporary and cutting-edge topics pertaining to various fields within Agricultural Engineering. The keynote speakers for the SAIAE and PASAE International Symposium are as follows:



Dr Sifiso Ntombela

Keynote: Agricultural Opportunities in South Africa.

Country: South Africa.



Mr Alastair Taylor

Keynote: Contributions of Agricultural Engineering to the Sustainable Development Goals (SDGs): Opportunities and Challenges in Africa.

Country: The United Kingdom.



Mr Wandile Sihlobo

Keynote: Agricultural Engineering Economy in the broader African context.

Country: South Africa.

SAIAE and PASAE International Symposium Keynote Speakers (Cont'd)



Mr Charlie Nicklin

Keynote: Trends in Agriculture Technology and/or New directions for Agricultural Engineering Professional Engineering Bodies (PEBs).

Country: The United Kingdom.



Prof Michael Faborode

Keynote: Sustainable Technologies for Agricultural Value-Chain Mechanization in Africa.

Country: Nigeria.



Prof Lawrence Gumbe

Keynote: Agricultural Mechanization within the African context.

Country: Kenya.



SAIAE and PASAE International Symposium Cocktail Networking Event



We are pleased to announce a Cocktail Evening on Tuesday, October 22, 2024, open to all attendees arriving before the Symposium begins on Wednesday, October 23. This event will feature light refreshments, entertainment, and a wonderful opportunity for delegates to network. More details will be shared as the date approaches. We hope you can join us for an enjoyable evening.

Registration

To register for the SAIAE & PASAE Symposium, please contact Mr Senzo Masikane – senzo@saiae.co.za or Ms Londiwe Mbambo – londiwe@saiae.co.za to receive the registration form or click on the following link: [SAIAE & PASAE Symposium Registration Form](#). A registration portal will also be available on the SAIAE website for delegates to utilize.

Virtual Option

We are also pleased to inform you of the revised virtual fee for students and for pensioners. Both students and pensioners can join us virtually from anywhere in the world to be part of the Symposium and enjoy the presentations and participate in the discussions at a discounted fee of R 2 500.00. To qualify for the discounted fee, please note:

- Student: You must be a registered student.
- Pensioner: You must be over the age of 60.

The KeSEBAE Annual Conference 2024

The Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE) Conference will showcase innovations, research and field initiatives that could inform the future of sustainable climate change. This year's conference aims to showcase the diverse opportunities for engineering-driven solutions to address climate change.

Through collaboration, innovation, and shared knowledge, we can engineer a sustainable future and mitigate the impacts of climate change for generations to come.

Conference Details:

- **Date:** 27 - 29 November 2024.
- **Venue:** University of Nairobi Towers.
- **Theme:** Engineering Climate Change.
- **Call for Abstracts Deadline:** 30 September 2024.

Conference Sub-Themes:

- Green Economy.
- Carbon Trading.
- Industrialization For Climate Change.
- Agricultural Mechanization For Climate Change.
- Waste Management For Climate Change.
- Energy Systems For Climate Change.
- Housing And Infrastructure For Climate Change.
- Irrigation and Water Resources.
- ICT Systems.
- Engineering Education and Practice For Climate Change.

For more information, please click on the conference link:
[https://kesebae.or.ke/etn/annual-conference-2024/.](https://kesebae.or.ke/etn/annual-conference-2024/)



The SANCOLD Conference 2024

The South African Committee on Large Dams (SANCOLD) invites all from South Africa, Africa and the wider family of ICOLD to participate in the Conference which will include technical presentations, technical site visit and an exhibition.



This event will offer dam and water resources engineers as well as all contributing to the dam engineering industry important international, regional and local linkages, networking and the exchange of knowledge and experience opportunities.

Conference Details:

- **Date:** 6 – 8 November 2024.
- **Venue:** The Wanderers Club, Johannesburg, South Africa.
- **Theme:** Water preservation a critical requirement for sustainability.
- **Call for Abstracts Deadline:** 21 October 2024.
- **Conference Link:** <https://sancold.org.za/event/sancold-annual-conference-2024/>

The Conference Sub-Topics:

- Modern technologies and methods in the design and construction of new dams.
- Climate and environmental adaption.
- Dam Rehabilitation.
- Emergency Management and Public Safety.
- Decommissioning of dams.
- Tailings Dam Operations/lifecycles and dam closure.
- Dams for water retention or flood control.
- Geotechnical aspects of dams and water engineering structures.
- Dam Safety and Risk Management.
- Hybridization of renewable energy systems.
- Pump Storage schemes and hydro power development.

Packhouse Optimization & Agro-Processing Summit 2024

Empire Conferencing and Training is inviting you to an unparalleled opportunity to explore the future of Packhouse and Agro-Processing industries at their upcoming Packhouse Optimisation and Agro-Processing Summit, in November 2024. The summit will bring together renowned experts and leading companies from around the globe to share insights on the latest advancements and strategies for creating smart packhouses. It is designed for stakeholders in agricultural production, post-harvest handling, and the exportation of fresh produce who are eager to stay ahead of the curve.

Some of the details pertaining to the Summit:

- **Date(s):** 12 - 13 November 2024.
- **Type:** In-person.
- **Location:** Protea Hotel, V n A Waterfront, Cape Town.
- **Full Invitation:** [Link to full Summit invitation.](#)

The Summit will cover the following themes:

- Digital Transformation.
- Automation and Robotics.
- Sustainability Practices.
- Food Safety and Security.



Nigeria State House Press Release

The Nigerian President, Bola Tinubu, on Tuesday in Abuja inaugurated the Presidential Committee on Implementation of Livestock Reforms to address obstacles to agricultural productivity and open up new opportunities which benefit farmers, herders, processors, and distributors in the livestock-farming value chain.

The President appointed former Chairman of the Independent National Electoral Commission (INEC), Professor Attahiru Jega, as Co-Chairman of the Committee.

President Tinubu emphasized that the implementation of the reforms will require the collective efforts of members of the committee, drawn from the public and private sectors, state governors, and all Nigerians.

"From here, I will appeal to everyone to remove every iota of partisan politics from this. I will assume the chairmanship of the committee as President and appoint Professor Attahiru Jega as my deputy or co-chair.

"This is not about politics; this is about opportunity. This is about our nation. While I may be absent, Jega will preside and continue to promote our objectives," the President said.

The President noted that the traditional method of livestock farming will need to be reviewed and repositioned with the support of stakeholders, which include state governments, in order to open up new opportunities for growth and prosperity.



Nigeria State House Press Release (Cont'd)

President Tinubu said the Attorney-General of the Federation and Minister of Justice, Mr. Lateef Fagbemi (SAN) will ensure the removal of all legal obstacles to the implementation of the reforms, while the Minister of Communication, Innovation and Digital Economy, Dr. Bosun Tijani will provide support with automation.

“Modern technology is available to us. We are ready to work. I said at the beginning, with you, all of you, the solution is here, and we must run with it. Any law that might inhibit the promotion and actualization of our objectives, the Attorney-General is here, please give it a priority; and the Minister of Budget and Economic Planning is here; create a budget for it to grow, and the Minister of Finance is here as well to work out the money,” the President stated.

The President also said the reforms will be comprehensive and collective, urging the support of all stakeholders.

“We need to provide the incentive to enable Nigeria to finally take advantage of livestock farming; dairy products and cold-chain logistics collectively offer substantial commercial and economic advantages. We have seen solutions and opportunities. With these adversities that have plagued us over the years, I believe that prosperity is here – in your hands.

“The dairy industry contributes significantly to nutrition and food security by supplying essential proteins and vitamins, through milk and its derivatives, such as cheese, yoghurt, and butter. Efficient cold-chain logistics is crucial in maintaining the quality and safety of these perishable goods from farms to markets, thereby reducing food waste and ensuring a steady supply.

Nigeria State House Press Release (Cont'd)

"This sector will boost agricultural productivity, enhance export opportunities and stimulate economic growth by fostering a robust value chain that benefits farmers, processors, herders, distributors, and consumers alike," the President said.

President Tinubu thanked the APC National Chairman for his initiative and leadership of the committee.

"Let me thank the former Governor of Kano State and the National Chairman of the All-Progressives Congress, Dr. Abdullahi Ganduje, for assembling the best minds and experts to find solutions by convening the National Conference on Livestock Reforms and Mitigation of Associated Conflicts in Nigeria in February last year," the President said.

In his remarks, the former Chairman of the committee thanked the President for taking further action, following the submission of a report on livestock reforms on September 28, 2023.

"We will surpass your expectations and bring succour to Nigerians. Once, again, we thank the President," the APC National Chairman added.

Culled from a Press Release by the Special Adviser to the President on Media and Publicity, July 9, 2024.



African Network Group of the American Society of Agricultural and Biological Engineers (ANGASABE)



Dr Mobolaji Omobowale, FNIAE, the Head of Department of Agricultural and Environmental Engineering, University of Ibadan has been elected as the President of the African Network Group of the American Society of Agricultural and Biological Engineers (ANGASABE). This was done at 30 July 2024, during the Annual International Meeting of ASABE.

The PASAE wishes to congratulate Dr Omobowale on this exemplary achievement and appointment. We trust and believe that under his stewardship, the ANGASABE will continue to reach new heights and make a lasting impact in the Agricultural Engineering fraternity.

The PASAE will continue to build and solidify its relations with various key role players in the field of Agricultural Engineering, as we strive to ensure the growth and success of the discipline.



The ANGASABE website link:
<https://angasabe.org/>



Fellowship of the International Academy of Agricultural and Biosystems Engineering (FiAABE)

The PASAE would like you to join us as we congratulate Professor Michael Faborode, President of the Pan African Society for Agricultural Engineering (PASAE) on the conferment of the Fellowship of the International Academy of Agricultural and Biosystems Engineering (FiAABE) by International Commission of Agricultural and Biosystems Engineering (CIGR) during the International Conference on Agricultural Engineering at Jeju Island, South Korea between May 21 and 25, 2024.

The FiAABE conferred by CIGR is the highest fellowship in Agricultural Engineering in the world. Big Congratulations to Prof Faborode, NIAE and PASAE for this well-deserved global recognition.

PASAE members, Professors Folarin Alonge and Linus Opara, were conferred with FiAABE by CIGR in Dec 2022 in Kyoto, Japan. We look forward to more PASAE members with this honour!

Professor. Michael Faborode
FiAABE, FAEng, FNSE, FAEEA, FNIAE
President, PASAE



FUTA Professor, Christopher Akinbile, Receives Federal Government Patent for Soil Measuring Device



The Chief Registrar, Trademarks, Patents and Designs ,Ministry Of Trade and Investment , acting under the aegis of the President ,Federal Republic of Nigeria , Bola Ahmed Tinubu , has given formal recognition via the issuance of a Certificate of Registration of Patent for an Integrated Digital Soil Moisture and Temperature Device ,christened MOISTEMP developed by a Professor of Agricultural and Environmental Engineering at the Federal University of Technology Akure, FUTA ,Christopher Akinbile.

The main intention of the invention, according to Professor Akinbile, is to take soil moisture and temperature measurement at various depth in-situ and concurrently. This is to facilitate irrigation scheduling and water management planning to achieve food security and attain the SDG goal of ending hunger by 2030. The invention solves the problem associated with lack of soil and moisture data which is responsible for increased rate of seed abortion because of high soil temperature and distorted plant growth and development due to water shortage.

The Chief Registrar of the Patent Office, Stella Ozo Ezenduka, who signed the Certificate of Patent on March 22,2024, affirms that Akinbile now has the sole use and advantage of the Invention. She also stated that "The Patent Certificate also confers on Akinbile full power, sole privilege, and authority over the invention. The Patentee shall have and enjoy the whole profit and advantage accruing by reason of the said invention."

FUTA Professor, Christopher Akinbile, Receives Federal Government Patent for Soil Measuring Device - Cont'd

She went further to warn those who may want to infringe on the Patentee rights over his invention with "a command to all citizens of Nigeria, that they do not at any time, make use of the invention in any way without the written consent, licence or agreement of the Patentee."

The drive that led to the development of the device arose because accurate soil temperature and moisture measurement is critical for crop production and cultivation. Also, because successful germination of seedlings depends on these two parameters. He gives more insight and relevance of the device, "Inaccurate consideration of these two parameters affect seeds germination, nutrients uptake and root development.

Temperature determines the rate of crop development and consequently affects the length of the total growing period of the crop. At higher temperatures, the rate of seed abortion increases while the mid-season stage of crop development is grossly impaired. Crop growth during acute water shortage (drought) results in crop stress which may destroy large hectares of farm crops.



FUTA Professor, Christopher Akinbile, Receives Federal Government Patent for Soil Measuring Device – Cont'd

MOISTEMP (combining moisture and temperature which are the two soil parameters that it will measure) works by logging all the readings in a google sheet and record the location of measurement using the GPS, both of which are embedded in the portable measuring device. Akinbile states that, "The need for these on-point information necessitated the development of this integrated measuring device. That will not only combine both measurements at various depths concurrently and all the values are displayed on the LCD monitor installed on the device, but also store and compare existing readings on googles sheet while displaying the exact latitude and longitude of the point of measurement.

All these contributes to food insecurity being experienced globally since irrigation could not be scheduled due to lack of information to ameliorate these extreme events." He says the uniqueness of MOISTEMP is that it can measure both parameters concurrently and at varying depths all at the same time unlike other devices of its kind.

According to Akinbile who is a Fellow of the Nigerian Society of Engineers (NSE) and also fellow of the Nigerian institution of Agricultural Engineers (NIAE) ,"The MOISTEMP device makes measurement easier, faster and enables prompt decision-making process on water management, planning and utilization to achieve increase food production especially in developing countries such as Nigeria. Its portability makes it easy to manage and move around while the introduction of service providers' ports enables it to make recordings that are location-specific anywhere in the world.

FUTA Professor, Christopher Akinbile, Receives Federal Government Patent for Soil Measuring Device - Cont'd

The combined introduction of SD card and google sheets making logging easy which can easily be transferred into computers using Bluetooth or USB cords."

The Vice Chancellor, Professor Adenike Oladiji, while congratulating Professor Akinbile on the milestone, described it as another validation of FUTA as a research-intensive institution with an eye on tailoring goals of research to solving social and societal challenges. "On behalf of management, I congratulate Professor Akinbile. This is a major step in our determination to combine research with development of relevant products for the good of our country and humanity. I call on relevant institutions and organizations to partner with Professor Akinbile to make the device readily available to end users to give the necessary fillip to the fight against food insecurity," the Vice Chancellor said.

MOISTEMP comes with a microcontroller unit, moisture sensor, temperature sensor, real time module, SD card shield, liquid crystal display (LCD) unit, sensor probe, USB cords, GPS receptor device, and PVC box which housed the entire components.

The Patent was granted to underscore the Federal Government's willingness to encourage all invention which may be for public good under the Patents and Designs Act; CAP 344 Laws of the Federation of Nigeria 1990.

FUTA Professor, Christopher Akinbile, Receives Federal Government Patent for Soil Measuring Device - Cont'd



Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria



As the world grapples with the escalating impacts of climate change, agriculture stands at a critical crossroads. A staggering statistic from the Intergovernmental Panel on Climate Change (IPCC) reveals that a mere 2°C increase in global temperatures could reduce agricultural yields by up to 15% under current farming practices.

This alarming reality underscores the urgent need for transformative approaches in agriculture, particularly in how we manage our food systems.

Enter climate-smart agriculture (CSA) a comprehensive strategy designed to mitigate climate change while ensuring food security for a rapidly growing population.

Climate-smart agriculture is not just a set of practices; it is an integrated approach that seeks to balance productivity, resilience, and sustainability in agricultural systems. By embracing CSA, farmers can adapt to changing climatic conditions while contributing to global efforts to combat climate change.

This blog will delve into the principles, importance, key practices, technological innovations, case studies, and challenges associated with CSA, highlighting its potential to revolutionize farming for a sustainable future.

Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria (Cont'd)

Understanding Climate-Smart Agriculture

Climate-smart agriculture (CSA) is defined as an approach that helps guide actions to transform agricultural systems toward green and climate-resilient practices. It focuses on three main objectives:

- **Increasing Productivity and Incomes:** CSA aims to sustainably enhance agricultural productivity and profitability, ensuring that farmers can meet the growing food demands of the global population.
- **Adapting and Building Resilience to Climate Change:** CSA encourages practices that help farmers adapt to changing climatic conditions, thereby strengthening their resilience against extreme weather events such as droughts and floods.
- **Reducing Greenhouse Gas Emissions:** A critical component of CSA is its focus on minimizing emissions from agricultural activities, contributing to global efforts to mitigate climate change.

By integrating these objectives into agricultural practices, CSA provides a framework for creating sustainable food systems that can withstand the challenges posed by climate change.

Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria (Cont'd)

Importance of Climate-Smart Agriculture

The urgency of addressing climate change in agriculture cannot be overstated. As developing countries are expected to bear the brunt of climate impacts—ranging from higher temperatures to altered precipitation patterns CSA emerges as a vital solution.

- **Food Security:** By enhancing productivity through sustainable practices, CSA plays a crucial role in ensuring food security in a changing climate. It enables farmers to produce more resilient crops that can thrive under adverse conditions.
- **Economic Benefits:** Farmers adopting CSA practices often experience increased incomes due to improved yields and reduced input costs. Moreover, by diversifying crops and implementing efficient resource management strategies, they can enhance their economic stability.

Several key practices form the backbone of climate-smart agriculture:

- **Sustainable Land Management:** Techniques such as crop rotation, cover cropping, and reduced tillage improve soil health and productivity while sequestering carbon.

Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria (Cont'd)

- **Water Management Strategies:** Efficient irrigation methods and rainwater harvesting are essential for conserving water resources and enhancing crop resilience during dry spells.
- **Crop Diversification:** Growing a variety of crops enhances resilience against pests and diseases while improving overall farm productivity.
- **Agroforestry:** Integrating trees into farming systems provides ecological benefits such as improved soil fertility and biodiversity while sequestering carbon.

Technological Innovations Supporting CSA

Technological advancements are pivotal in facilitating the implementation of climate-smart agriculture:

- **Precision Agriculture:** Utilizing GPS technology and data analytics allows farmers to optimize resource use, enhancing productivity while minimizing environmental impact.
- **Remote Sensing and Data Analytics:** These tools enable farmers to monitor crop health and soil conditions in real-time, informing timely management decisions.

Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria (Cont'd)

- **Mobile Applications:** Various mobile apps are now available to assist farmers in implementing CSA practices.
- **Smart Irrigation Systems:** Technologies such as drip irrigation and automated irrigation systems use sensors to monitor soil moisture levels and adjust water delivery accordingly.
- **Blockchain Technology:** Blockchain offers a transparent and secure way to track agricultural products from farm to table
- **Integrated Pest Management (IPM) Tools:** Technological advancements in pest monitoring systems allow for more effective implementation of IPM strategies.
- **Climate Resilient Crop Varieties:** The development of genetically modified organisms (GMOs) that withstand extreme weather conditions significantly contributes to enhancing food security.

Challenges and Barriers to Implementation

Despite its potential, several challenges hinder the widespread adoption of climate-smart agriculture:

- **Financial Constraints:** Many smallholder farmers lack access to financing needed for transitioning to CSA practices.

Farming for the Future: Embracing Climate-Smart Agriculture for Sustainable Growth, Nigeria (Cont'd)

- **Knowledge Gaps:** There is a pressing need for education and training on CSA methods among farmers who may be unfamiliar with these innovative approaches.
- **Policy Support:** Effective government policies are crucial for promoting CSA adoption; however, many regions lack supportive frameworks that encourage sustainable agricultural practices.

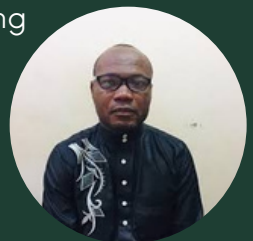
As we face an increasingly uncertain future due to climate change, embracing climate-smart agriculture is not just beneficial it is essential. By supporting sustainable practices through advocacy, informed purchasing choices, or personal actions, we can contribute to building resilient agricultural systems capable of feeding future generations. The potential of climate-smart agriculture lies not only in its ability to enhance productivity but also in its capacity to foster environmental stewardship. Together, we can cultivate a sustainable agricultural landscape that thrives amidst the challenges posed by our changing planet.

© Engr. John Audu. PhD

Department of Agricultural and Biosystem Engineering

College of Engineering

Joseph Sarwuan Tarka University, Makurdi, Nigeria.



55th Inaugural Lecture of Michael Okpara University of Agriculture, Umudike, Nigeria

Some highlights of the 55th Inaugural Lecture of Michael Okpara University of Agriculture, Umudike, delivered by Prof. Kayode Joshua Simonyan, on the topic 'Unveiling the Wedlock of Endogenous Technologies and Sustainable Economic Growth', Wednesday 14 August 2024.



1. The power situation in educational institutions in the country does not support research. Efforts should be geared towards developing alternative energy sources to promote research opportunities.
2. The research ecosystem in Nigeria needs an intentional overhaul and upgrade. The current state of equipment in the laboratories and workshops cannot support cutting-edge research. The procurement process should be re-calibrated to allow varsities to purchase research equipment directly from manufacturers and dealers. Third-party engagement should be discouraged.
3. There is a need to think and act locally by adopting locally developed technologies. Local content should be deliberately promoted. Nigeria should look inward to utilize locally produced machinery.
4. The Standard Organization of Nigeria (SON) and the National Center for Agricultural Mechanization (NCAM) should work towards developing standards for endogenously developed technologies.

55th Inaugural Lecture of Michael Okpara University of Agriculture, Umudike, Nigeria (Cont'd)

5. Adequate funding of research is necessary to unlock new frontiers and promote a competitive market.

6. Nigeria cannot talk of endogenous capacity without a functional steel industry. Ajaokuta Steel Company and others should be activated.

7. A reliable database should be created for Agricultural Technologies in the country, which will serve as a basement for advancing existing ideas and exploring opportunities in areas untapped.

8. Nigeria should look inward for solutions to challenges of National development. No stranger will feel the pulse and be more concerned about the development of a nation than its citizens.

9. Conscious efforts must be in place to ensure the reengineering of the short-medium-long term developmental goals of the country in line with the demands of the 21st century.

10. Mentorship is strategic to bridging the knowledge transfer gap.



PASAE Video Series

The PASAE, in partnership with the South African Institute of Agricultural Engineers (SAIAE), through the funding from the Royal Academy of Engineering (RAEng), have developed and completed a twelve (12) Video Series! These videos have the objective of raising the public awareness of Agricultural Engineering as an industry and career path in Africa.

The said videos will look to illustrate the power of Agricultural Engineering by highlighting twelve (12) different areas of Agricultural Engineering. So, stay tuned and see the power and potential of Agricultural Engineering in Africa!

We would like to also thank all the collaborators who greatly assisted in compiling the scripts, the videographer and the review panels. We thank you.

Do enjoy and do not forget to follow, like, share, and spread the word!

The videos will also be published on our social media platforms and the PASAE website.

LinkedIn Page:

<https://www.linkedin.com/feed/update/urn:li:activity:7148958865697542146>

Website: https://www.pasae.org.za/video_series.html



SAIAE Agricultural Engineering Podcast

This podcast is brought to you by Agricultural Engineering professionals who are members of the South African Institute of Agricultural Engineers (SAIAE). The Royal Academy of Engineering (RAEng) funded the podcast to provide current and topical information and interviews on various subjects in the agricultural engineering field, such as agricultural mechanization, precision agriculture, renewable energy, food packaging, soil conservation, hydrology and dams, and more. The podcast features interviews with South African experts worldwide, as well as undergraduate and postgraduate experiences and research.

You can find episodes on Amazon Music, Apple and Google podcasts, and Spotify to listen. Please follow, subscribe, and share the Agricultural Engineering podcast with your friends and colleagues. New episodes released once a month, and you can contact senzo@saiae.co.za with any comments or suggestions.

Podcast Link:

<https://agriculturalengineeringspodcast.buzzsprout.com/>.

Website: <https://saiae.co.za/agricultural-engineering-podcast/>.



PASAE Membership Fees

As the PASAE Secretariat, we would like to express our sincerest gratitude to our members for the continued support and dedication in settling Membership Fees.

Please be reminded of the PASAE membership fees for the 2024/25 period:

- The Individual Membership fee = 30 USD.
- The Corporate Membership fee = 120 USD.
- The Life Membership fee = 300 USD.

Please note that our membership invoices reflect two payment methods for your convenience. In addition to our main FNB account, we are pleased to offer an alternative payment option through PayPal.

Our payment methods are as follows:

1) **FNB Account Name:** Pan African Society for Agricultural Engineering NPC.

Account Number: 62861803586

Account Type: Platinum Business Account Branch Code: 252445
SWIFT Code: FIRNZAJJ

2) **PayPal Name:** The Pan African Society for Agricultural Engineering NPC

Link: https://www.paypal.com/paypalme/pasaemembershipfees?country.x=ZA&locale.x=en_US.

The PASAE Office will continue to follow-up on the payment of outstanding membership fees and issuing digital membership certificates. Should you have any questions or require assistance regarding the payment methods or your membership, please do not hesitate to contact our dedicated team at administrator@pasae.org.za.

Contact Information



If you wish to be part of the PASAE by becoming a member, contributing articles, providing suggestions and if you wish to inquire about any relevant PASAE matters, please do not hesitate to contact us. The Society's contact details are as follows:



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<https://www.pasae.org.za/index.html>



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