

**PROFESSOR**

Department of Environmental and Biosystems Engineering,  
Faculty of Engineering  
University of Nairobi,

P.O Box 30197,  
Nairobi, Kenya.  
Phone: +254 722 878 029 (Mobile).

E-mail: [ayub.gitau@uonbi.ac.ke](mailto:ayub.gitau@uonbi.ac.ke) ; [gitauan@yahoo.co.uk](mailto:gitauan@yahoo.co.uk)

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Sex, Date of Birth: (No. 1300441/1986)	Male; 20 <sup>th</sup> October, 1966.
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Marital Status:	Married .
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Nationality:	Kenyan.
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**MEMBERSHIP AND REGISTRATION TO PROFESSIONAL ORGANIZATIONS:**

**Member:** Engineers Board of Kenya (EBK) and Institute of Engineers of Kenya (IEK), Kenya. Consulting Practicing Engineer (Nos. E539; A 2405 & M5575);

**Council Member:** -Institute of Engineers of Kenya (IEK) 2019-2021;  
-Africa Network of Scientific and Technological Institute (ANSTI) 2022-2024;

**Member:** International Council on Systems Engineering (INCOSE); 2022 No. 308776;

**Member:** University of Nairobi (UoN) Alumni Association. Silver life member, No. 00141;

**Trustee Member:** Environment Institute of Kenya (EIK): No. 2204; 2021-2026.

**Member:** American Society of Agricultural and Biological Engineers (ASABE) = ID 1052695;

**Member:** International Soil Tillage Research Organization (ISTRO);

**Member:** Kenyan Society of Environmental; Biological and Agricultural Engineers (KESEBAE). Fellow:  
No. K18002;

**Member:** Kenya Conservation Tillage Initiative (KCTI);

**Lead Expert:** National Environment Management Authority (NEMA): EA and ESIA — No. 1773 &

**Quality ISO Lead Auditor:** UoN – KEBS – No. 1312/NQI/2014.

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## BACKGROUND

I am an Agricultural Engineer Registered with Engineers Board of Kenya (EBK) as a Consulting Engineer with over 35 years of academic and practical experience in: Agricultural Mechanization, Power and Machinery Engineering and Infrastructure (Water; Irrigation and In-built Environment) Development; Water Harvesting Technologies; Environment; Renewable Energies and Conservation Agriculture Technologies. Held various positions which include: Lecturer and Head of Department of Science and Technology, Kenya Industrial Training Institute (KITI) – Ministry of Trade and Industry (1997-2001); Lecturer and Ag. Head of Department of Agriculture and Natural Resources – Kenya Methodist University (2001-2002), full time Lecturer – University of Nairobi (2002 to 2008); Senior Lecturer (2008 to 2014); Associate Professor (2015 to Feb 2023) and Professor (March 2023 to date). Acted chairman; Department of Environmental and Biosystems Engineering (EBE); April & September, 2005; April, 2007 and 2010. I served as the Chairman of the Department of Environmental and Biosystems Engineering at the University of Nairobi (UoN) from July 2011 to July 2017 and acted as the Dean of the School of Engineering in February 2017. I served as the substantive Dean of the Faculty of Engineering at UoN from March 2019 to June 2024. Currently, I am the Acting Deputy Vice Chancellor for Academic Affairs at UoN since August 2024. Additionally, I acted as the Principal of the College of Architecture & Engineering (CAE) in November 2019 and February 2021. I am a member of several Senate committees and served as a Council Member for the Institute of Engineers of Kenya (IEK) from 2019 to 2021. Additionally, I am a Trustee for the Environment Institute of Kenya (EIK) for the period 2021-2026.

I have received training in Corporate Governance, Management, Strategic Planning and leadership under; Kenya Bureau of Standards (KEBS) 2009-2014 on institutional management systems, the Institute of Engineers of Kenya (IEK) in 2018, as well as in Gender Mainstreaming at the University of Nairobi (UoN) in 2021. Undertook two weeks training in management and leadership coupled with mechanization development in Israel in 2006. I have received numerous awards of excellence and recognition in lecturing and reviewing journal papers from UoN and international journals respectively. As a Dean and now acting DVC – AA, I have led the implementation of ICT solutions in teaching and learning, facilitating a seamless transition to digital platforms through workshops and training sessions. Thus supporting blended learning approaches and significantly improving learning outcomes. Leveraging digital systems, we have successfully conducted webinars, connecting students with the global communities to enrich their educational experiences. Been a resource person in development of the EBE Curriculum (2000- 2003) and lead in the revision and accreditation (by EBK) of the curriculum (2016) for University of Nairobi (UoN). Resource person with Embu and Kenyatta Universities for Engineering programs development and aligning to Commission for University Education - CUE (2018-2020). Additionally, I worked as a resource person for the former Commission for Higher Education (now CUE), reviewing, evaluating and monitoring project proposals and on-going projects respectively in; Built Environment, mechanization, tillage, energy, power, irrigation, water and environmental conservation. Have attracted funding and implemented a project on: Agricultural Technologies for conservation tillage in semi-arid Rachuonyo District; funded by Lake Victoria Research Initiative (VICRES) and Inter-University Council of Eastern Africa (IUCEA) (2005-2010).

Implemented a project in collaboration with Universities in East Africa and Europe under ERASMUS + and Edulink II on: Energy-Agro food synergies: An educational model for universities from 2012 to 2017. Implemented a project titled: Water Harvesting for Sustainable Food and Nutritional Security (WHENFS) in Semi-Arid Kitui West District, under National Commission for Science, Technology and Innovation (NACOSTI) funded from 2011 to 2014. Currently, I am strategizing the implementation of an Irrigation-Renewable Energy System project in collaboration with Aston University (UK) and UoN under the Africa Agri-tech Knowledge Transfer Partnership (AAKTP) for 2022-2024. I have been an external Examiner for Makerere University (Uganda), Department of Agricultural and Biosystems Engineering from 2011 to date (Postgraduate Thesis); Jomo Kenyatta University of Agriculture and Technology (JKUAT), Department of Biomechanical and Environmental Engineering from 2011 to date (Postgraduate Thesis) and 2015-2019; (BSc programs); Egerton University, Department of Agricultural Engineering for undergraduate and postgraduate examinations from 2011 to 2018 and University of Zimbabwe, Department of Soil Science and Agricultural Engineering for undergraduate and postgraduate examinations from 2015 to 2019.

I have Published widely and reviewed numerous manuscripts in and for peer refereed journals from 2005 to date including; Agricultural Engineering International CIGR e-journal, Elsevier, Africa journal of science and technology, Taylor and Francis Energy series; Australian journal of Agricultural Engineering; Agricultural Mechanization in Asia, Africa and the Pacific (AMA-editor); Asian Journal of advanced Research among others. Editing scientific publication and text books with East Africa Education Publishers (EAEP) from 2003 to-date. Extensive training, research and consultancy experience and expertise in: mechanization development; process engineering, renewable energies; water harvesting, irrigation systems, equipment design and valuation and conservation agricultural equipment and technologies for small and medium scale farmers in developing Countries. Sourced for research funds regionally and internationally with community service components through University of Nairobi Grants and Enterprises Limited (UNES). Registered lead expert in ESIA/EA with NEMA and a lead Quality Assurance ISO Auditor with Kenya Bureau of Standards (KEBS) in Quality Management Systems (QMS) for cooperate organization and Institution of higher learning. Conducted international training and consultancies in: Built Environment, Mechanization, post-harvest processes, renewable energies, solar, biogas and wind, conservation tillage and rainwater harvesting. I have been instrumental in outreach and community engagement through hosting World Engineering Days at UoN, student mentorship and motivation in numerous boards and dissemination of research findings to society. Spearheaded the Faculty of Engineering drive (2020 – 2024) towards competent Based Curriculum / Learning (CBC/L) to be implemented in the Universities by 2029.

## **A: EDUCATIONAL AND EMPLOYMENT RECORD**

### **A1: EDUCATIONAL RECORD**

- 2001 – 2004: PhD Studies: University of Nairobi; Obtained PhD degree (2005) in Agricultural Engineering (**Soil Mechanical Behaviour, Tillage Modeling and Tool Design** Thematic Area).
- 1992 - 1994: MSc. Studies: University of Nairobi; Obtained MSc. Degree (1996) in Agricultural Engineering (**Power, Machinery and Mechanization Engineering** Thematic Area).
- 1987 - 1990: BSc. Studies at Egerton University; Obtained an Upper Second Class Honours degree in Agricultural Engineering (1990).
- 1984 - 1985: “A” Level Education; Obtained 3 Principles and 1 Subs.
- 1980 - 1983: “O” Level Education; Obtained Second Division.

### **A2: EMPLOYMENT RECORD**

- August 2024 – to date** **DVC – AA (ag)** University of Nairobi
- 2019 – June 2024:** **Dean;** Faculty/ School of Engineering. University of Nairobi;
- 2011 - 2017:** **Chairman;** Department of Environmental & Biosystems Engineering; University of Nairobi;
- 2023 - to date** **Professor;**
- 2015 - 2023:** **Associate Professor;** University of Nairobi;
- 2015 – to date:** **Adjunct Professor;** Kenyatta University;
- 2008 - 2014:** **Senior Lecturer;** University of Nairobi;
- 2002 –2008:** **Lecturer and Researcher;** University of Nairobi;
- 1995 – 2001:** **Part-time lecturer;** University of Nairobi and JKUAT;
- 2001 – 2002:** **Lecturer; Researcher** and Ag. Head; Department of Agriculture and Natural Resources – Kenya Methodist University Meru &
- 1995 – 2000:** **Lecturer and Engineer;** Head of Department of Science and Technology, Kenya Industrial Training Institute (KITI) –Ministry of Trade and Industry Nakuru.

## **B: NATIONAL & INSTITUTIONAL CONTRIBUTION, TECHNICAL, MANAGEMENT, LEADERSHIP AND OUTREACH ACTIVITIES**

The following forms part of the key contributions and activities made Nationally & Institutionally in line with the Country and University Mandate: **Resource Person** (Leadership & Management);

### **B1: AT UNIVERSITY OF NAIROBI**

- 1) **University of Nairobi Senate and Dean Committee Memberships;**
  - ❖ University of Nairobi Web ranking Committee. Chair; Feb 2025;
  - ❖ AD HOC contract implementation committee for provision of security guard services, Chair and Member; 2024;
  - ❖ University Executive Board (UEB) sub-committee to review support services to campuses and facilities; 2024;
  - ❖ Committee on evaluation of boreholes in Kikuyu, Kenya Science and Parklands Campuses, Chair; 2023;
  - ❖ Committee on the operationalization of service and teaching, member; 2023;
  - ❖ Committee on curbing examination cheating, chair; 2023;
  - ❖ Tender Evaluation Committee for Architectural Programming for the Engineering and Science Complex (ESC) of the University of Nairobi, Chair; 2023;
  - ❖ University Prize Award Ceremony – 2021 & Chair 2022;
  - ❖ Development of; 2023-2028 Mental Health and Sexual Harassment Policies and Review of the HIV policy, member 2022;
  - ❖ Committee to review the HIV/AIDS policy, member; 2022;
  - ❖ Steering Committee 67<sup>th</sup> University Graduation Ceremony – Chair 2022;
  - ❖ Development of 2022/23 UoN Bribery & Corruption Risk Assessment and Mitigation Plan – Chair 2022;
  - ❖ Steering Committee on Student Management Information System (SMIS) graduation module, member; 2021;
  - ❖ University Central Corruption Prevention Committee, member; 2021;
  - ❖ Engineering & Science Complex Project Committee, member; 2021;
  - ❖ Fees Alignment with Differentiated Unit Cost (DUC), member; 2021;
  - ❖ Academic Staff Appointment and Promotion Criteria Committee, member; 2020;
  - ❖ Corporate Road Safety Mainstreaming, Chair; 2020;
  - ❖ Technical Evaluation Committee for annual service and maintenance of generators to the University of Nairobi, Chair and Member ;2020;
  - ❖ Implementation of biometric access control systems, member; 2019;
  - ❖ Biometric Access Control System member; 2019;
  - ❖ Student Elections and Election Petition Framework member; 2019 &
  - ❖ Policy on Issuance of staff uniforms, Chair; 2019.
- 2) **University of Nairobi Engineering Curriculum Review;**
  - ❖ Coordinating revision and alignment to CUE guidelines of all Engineering curriculum at the School of Engineering, UoN namely; Biosystems, Civil, Electrical & Electronic; Geospatial; Mechanical and Petroleum Engineering (2018 – 2021);
  - ❖ Revision and accreditation (by EBK) of the Biosystems Engineering curriculum (2016) &.
  - ❖ Development of the Environmental and Biosystems Curriculum (2000 - 2003).
  - ❖ Development of a PhD curriculum on Dry-land Resources Management. Contributed inputs in engineering technologies and the environment. KCB –Karen, 4<sup>th</sup> -6<sup>th</sup> March, 2007.
- 3) **College of Architecture and Engineering (CAE); School of Engineering (SoE) and Department of Environmental and Biosystems Engineering (EBE) Strategic Leadership;**
  - ❖ College Disposal Committee. Chair and member (2009 - 2019);

- ❖ School National Cohesion and Values Board (2015);
- ❖ College Quality Assurance Officer. Chair (2009 – 2011);
- ❖ College Environmental Audit. Chair (2008 – 2011).
- ❖ College Safety and Health Committee. Chair (2007 – 2011).
- ❖ School Postgraduate Studies Committee (SPSC). Chair and Member (2007 – 2011).
- ❖ Mechanization, Power and Machinery Engineering Section. Departmental Thematic Head (2005 to date).
- ❖ Departmental and Examination coordinator (2002 – 2009).
- ❖ Installation, Commissioning and Calibration of a triaxial machine in the Department of Civil and Construction Engineering (April, 2010).
- ❖ Other Departmental leaderships include; Development and income generation; library and bookshop, short-listing and chief examinations officer (2002 to 2011).

#### **Other Universities Engineering Curriculum Review;**

- ❖ Resource person: With Embu University for: Civil Engineering program in development and aligning to CUE (2020).
- ❖ Resource person: With Kenyatta University (KU) for Agricultural & Biosystems Engineering program: capacity building; development, aligning and Accreditation by CUE. 2015 to date.

## **B2: NATIONAL AND INTERNATIONAL ENGAGEMENT**

### **1) National Engagement;**

- ❖ National Environmental Fund (NETFUND). Evaluation Committee member (2013 to 2019);
- ❖ AGRA funded CA4FS project in Machakos and Laikipia Counties. Mechanization models for Africa. Advisory committee member (2013 to date);
- ❖ Electric Mobility: 2 & 3 Wheelers. Energy and Petroleum Regulatory Authority (EPRA) 2018-2020. Pilot project of the Vehicle Labeling and Fee-bate in Kenya. UNEP- Energy Regulatory Commission (ERC). Team Leader: 2014/2015; 2016/2017.
- ❖ Pilot project of the Global Fuel Economy Initiative (GFEI) and Modeling in Kenya. UNEP- Energy Regulatory Commission (ERC). Team Leader: 2013/2014.
- ❖ African Conservation Tillage Network Technical Advisory Committee. Member (2013)
- ❖ Introduction of camel draft power into mixed farms of Laikipia and Makueni Counties, Kenya. June 2010.
- ❖ Reviewing, evaluating and monitoring project proposals and on-going projects respectively in; Mechanization, tillage, power, irrigation, environment, water and conservation under the former Commission for Higher Education (CHE); 2006 to date.
- ❖ International Workshop for stake-holders in Agricultural Mechanization. Theme: Strategies and plans for running a vibrant regional mechanization process; 22<sup>nd</sup> June, 2005 at AIRC, Kabete.
- ❖ Re-invigorating the University mandate in a globalizing environment: Challenges, obstacles and way forward. Kenya DAAD Scholars Association (KDSA). Kenyatta University; 26<sup>th</sup> – 27<sup>th</sup> May, 2005.

### **2) International Engagement;**

- ❖ International Council on Systems Engineering (INCOSE). Corporate Advisory Board (CAB) Member and Academic Council (AC) Representative for Kenya and the University of Nairobi. 2022-2026.
- ❖ UoN-Paris Tech Exchange under ESC Programme 24<sup>th</sup> to 28<sup>th</sup> February 2020. Paris, France.
- ❖ America Society of Agriculture and Biological Engineers (ASABE), Africa rep 2017 to date.
- ❖ United Nation Development Programm (UNDP) Global Environmental Fund (GEF) - Small Grants Programme(SGP). Steering Committee; 2012 – 2016.
- ❖ Continental (Africa) training on Post harvest seed drying and processing; 2010 - 2019.
- ❖ Agricultural Mechanization in Asia, Africa and Latin America, Farm Machinery and Industrial Research; Editorial board; 2017 to date
- ❖ Evaluation on Staff Promotion to Associate Professor. University of Jordan (2015).
- ❖ African Conservation Tillage Network Technical Advisory Committee; 2013

- ❖ World Agro-Forestry Centre – ICRAF Mechanization Survey 6<sup>th</sup> to 14<sup>th</sup> May 2010. Rwanda.
  - ❖ Training of Agricultural officers (from Malawi) on conservation tillage as a tool for rainwater harvesting at KARLO Headquarters. 31<sup>st</sup> August, 2008.
  - ❖ A comparative perspective of Conservation Tillage Experiences between Australia and Kenya. 27<sup>th</sup> April, 2007. KARI Headquarters.
  - ❖ Regional workshop on; Pollution/Heavy Metal Seminar. Contributed in Conservation Tillage Technologies for Reduction of Lake Victoria Pollution. VICRes. Jinja Nile Resort, Uganda, 21<sup>st</sup> -24<sup>th</sup> March, 2007.
  - ❖ Regional Stakeholders' Consultative Workshop: Regional Universities Forum for Capacity Building in Agriculture (FORUM). Contributed in the engineering inputs and applications, 6<sup>th</sup> – 8<sup>th</sup> February, 2005.
- 3) **Scientific Journal Engagement;**
- ❖ Editorial Board: Agricultural Mechanization in Asia, Africa and the Pacific (AMA). 2017 to date.
  - ❖ Scientific Board: National Resources, Agricultural Development and Food Security. International Research Network – NAF-IRN (2016-2021).
  - ❖ Journal of Applied Science and Technology. Manuscripts Reviewing (2018 to date).
  - ❖ Write-shop on a manual for conservation tillage for farmers and extension workers in Africa. Contributed in editing and provision of technical information for the chapter on: Tillage tools, equipment and other land preparation machinery for conservation tillage. 17<sup>th</sup> -30<sup>th</sup> April, 2005.
  - ❖ Editing scientific publication with East Africa Education Publishers (EAEP). 2003 to-date.

### **B3: PROFESSIONAL BODIES ENGAGEMENT**

- 1) **Engineers Board of Kenya (EBK);**
- ❖ Professional Review Board-Agricultural. Panelist (2020 to date)
  - ❖ Food Security & Sustainable Agriculture development. Panelist in Retreat (21<sup>st</sup> Nov 2018);
- 2) **Institute of Engineers of Kenya (IEK);**
- ❖ Mentorship Board (2022 to date).
  - ❖ Council Member (2019-2021).
  - ❖ Alternate Dispute Resolution (ADR). Chair (2019 – 2021).
  - ❖ IEK KEPSA representative 2019 - 2022.
  - ❖ Professional Review Board –Agricultural. Panelist (2019 to date);
  - ❖ Corporate Governance, Management and Strategic Planning (13<sup>th</sup> -14<sup>th</sup> Dec, 2018);
  - ❖ Irrigation & Mechanization Session. Chair (12<sup>th</sup> May, 2018).
  - ❖ Conference Committee Member, 2016 to 2017.
- 3) **Kenyan Society of Environmental, Agricultural & Biological Engineers (KESABE);**
- ❖ Fellow Member and Vice Chair (2016 to date).
  - ❖ Technical Conference Organizing Committee at UoN; 2019-2021.
- 4) **Pan African Society for Agricultural Engineering (PASAE);**
- ❖ Conference Committee; 2018.
- 5) **Environment Institute of Kenya (EIK);**
- ❖ Lead Member; 2009
  - ❖ Board of Trustee; 2021-2026.

### **B4: OUTREACH AND COMMUNITY ENGAGEMENT**

- 1) **1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> World Engineering Days (WEDs);**
- ❖ Coordinated the functions on University of Nairobi grounds and Central Business District (CBD). Organized through the Office of the Vice Chancellor and School/Faculty of Engineering by IEK & EBK. 4<sup>th</sup> March; 2020, 2021, 2022 & 2023.
- 2) **National Engineering Students Career Weeks;**
- ❖ Career Focus and Mentorship. Organized by Institute of Engineers of Kenya (IEK); 8<sup>th</sup> – 12<sup>th</sup> April; 2021 & 7<sup>th</sup> – 11<sup>th</sup> March; 2022.
- 3) **Dissemination of Research findings in Irrigation Systems to Communities. 2010 to date.**



- ❖ NYS Five Year Business Plan for Commercial and Enterprises – Engineering and Mechanization 2024
  - ❖ Ndiriti-Aguthi Irrigation Project 2018-2023. Design and supervision on the rehabilitation scheme.
  - ❖ Soil and Water Conservation Measures Survey for Upper Tana 2014.
  - ❖ Hola Irrigation Scheme rehabilitation; 2012-2013.
  - ❖ Rwanda Irrigation Master Plan; 2013.
- 4) **Mentorship; Motivation & Community outreach.**
- ❖ Faculty/School of Engineering Students Associations ESA Patron and UNSA; 2019 – 2024.
  - ❖ Women in Engineering Student Summit, 2024.
  - ❖ Mentorship of Next Generation of Engineers, 2024.
  - ❖ A talk in: ‘Creating Safe and Inclusive Campus Spaces for Students’ – May 2022 – UNSA leadership.
  - ❖ Assisted in organizing the “International Engineering Students Conference (IESC)” 2020, 2021, 2022, 2023 & 2024.
  - ❖ Mentorship Programme for the Faculty of Engineering students, 2023.
  - ❖ Organized visits to needy persons with staff and students; Charity and Environmental protection through the planting of tree seedlings & cleaning the surrounding 2011 - to date.
- 5) **Board of Managements (BoMs);**
- ❖ PCEA Kikuyu High School, Kikuyu: Rep Community & Chair – Finance Committee (2019 – 2022 & 2022-2005) & Chair May 2022 to date.
  - ❖ Komo Secondary School, Thika. Member & Chair of academic committee (2012 – 2022).
- 6) **School student Mentorship and Motivation;**
- ❖ Counselling and Motivation. Githunguri Girl Secondary School, Murang’a (2024).
  - ❖ Counselling and Motivation. Ufanisi Senior School, Kikuyu (2017-2019).
  - ❖ Academic committee. Ufanisi Senior School, Kikuyu (2017-2018).
- 7) **Religious Engagement;**
- ❖ Presbyterian Church of East Africa (PCEA) – Sigona Development Committee. Member & Chair: 2015 to date.

## **B5: OVERALL LEADERSHIP AND MANAGEMENT TRAINING**

### **Senior Management and Leadership Training (for over 6 weeks cumulatively)**

- 1) **Quality Management Systems (QMS) ISO 9000** Series for cooperate organization and Institution of higher learning.
  - a) Trained & examined in quality assurance an ISO Internal auditor, lead auditor and Q-pause data analysis. **2009,2011 & 2014** by **KEBS**. Total 10 days.
  - b) Internal Quality Auditors refresher training, January 12<sup>th</sup> – 13<sup>th</sup> **2016** in Kenya School of Monetary Studies. 2 days.
  - c) ISO refresher training on Continued improvement Nakuru- 6<sup>th</sup> -8<sup>th</sup> Feb **2012**. 3 days.
- 2) Corporate Governance, Management and Strategic Planning IEK (13<sup>th</sup> -14<sup>th</sup> Dec, **2018**). 2 days
- 3) Training in Rapid Results Initiatives (RRI) and Performance Contracting Appraisal (PCA). Through ministry of education staff. UoN. 2<sup>nd</sup> November, **2008**. 1 day.
- 4) Management Induction course for Deans and Associate Deans September 1<sup>st</sup> -2<sup>nd</sup> **2022** in Naivasha. UoN. 2 days.
- 5) International R&D training in leadership and management of agricultural engineering technologies and mechanization in institution and Government. 18<sup>th</sup> –31<sup>st</sup> October, **2006**. Volcani Campus, Bet Dagan, Israel. 14 days.
- 6) Energy – Agro-food Synergies in Africa: New Educational Models for Universities Training in Ethiopia, Mekelle University August 31<sup>st</sup> – 5<sup>th</sup> September **2015**. 6 days.
- 7) Netfund Green Innovations Award National Steering Committee Leadership Training 16<sup>th</sup> to 17<sup>th</sup> January **2014**. 2 days.
- 8) Training in pedagogy: From Kikuyu campus (UoN) to CAE staff. 15<sup>th</sup> -17<sup>th</sup> October, **2008**. 2 days.



## **C: UNIVERSITY CONTRIBUTIONS (TRAINING & RESEARCH COLLABORATION AND PARTNERSHIP)**

### **C1: TRAINING / LECTURING**

University Performance Contract Ratings: 2005-2020- **Good; Exceeds Expectation; Outstanding** and Currently - **Exemplary. Position 3** in the University of Nairobi under best lecturer category FY 2021/2022.

30 years Lecturing experience at University level: -

- 1) At the **University of Nairobi**: Lecturing; examining and supervising undergraduate and postgraduate students since 1996 to date, in the areas of: Mechanization Development, Energy, Power and Machinery Engineering, Structures Engineering, Process (value addition) and Food Engineering; Similitude Engineering and Science and Technology in Development.
- 2) At Jomo Kenyatta University of Agriculture and Technology (**JKUAT**): Lecturing and examining (part-time) undergraduate students for 6 years (from 1995) in: Mechanization, Power and Machinery Engineering, Structures Engineering and Post-Harvest Technology.
- 3) At Kenya Methodist University (**KEMU**): Lecturing; examining and supervising undergraduate courses for 2 years in: Mechanization, Power and Machinery Engineering, Structures Engineering, Post-Harvest Technology and Pre-University Mathematics.
- 4) Kenyatta University (**KU**): Adjunct Professor in Agricultural and Biosystems Engineering. 2015 to date.

### **C2: RESEARCH COLLABORATION & PARTNERSHIP**

#### **C 2-1: Research Collaboration & Partnership:**

- 1) Majico Ltd, INNO\_NEAT Ltd, UoN and Kenyatta University; Development of Repurposed Energy Solutions for Solar Water Kiosks Systems and Testing, Improvement and Piloting of Water Kiosks Systems. 2024-2026.
- 2) Global Centre on Adaptation (GCA) and UoN – Faculties of Engineering and Science & Technology. In: Enhancing and Scaling up Climate Adaptation for Resilient Infrastructure in Kenya and the East Africa Region. 2022-2025.
- 3) Aston University (UK); University of Nairobi (Kenya) and Solargen Technology Limited (Kenya – Industrial Partner) on Africa Agri-tech Knowledge Transfer Partnership (AAKTP) in: Design and Development of a Hybrid Energy Powered Smart Irrigation System (2022-2024).
- 4) Department of Environmental and Biosystems Engineering -University of Nairobi / Department of Agri-Food Science and Technology - University of Bologna – Italy (EDULINK II) on Energy-agro food synergies in Africa: New Educational Models for Universities (2013 to 2017).
- 5) Agricultural Technologies for conservation tillage in semi-arid Rachuonyo District. Lake Victoria Research Initiative (VICRES) and Inter-University Council of Eastern Africa (IUCEA) & University of Nairobi (2005-2010).
- 6) MoU KENDAT and UoN: Renewable energies and Conservation Agriculture Technologies. 2014.
- 7) MoU Department of Environmental and Biosystems Engineering -University of Nairobi / EurA Themie Innovation GmbH. 2012 to 2017
- 8) MoU NIB and UoN: Research input and development in Bura and Hora Irrigation Schemes. 2011
- 9) MoU MINAGRI – Rwanda and UoN: Training of technical staff on: Mechanization; Power and Machinery. 2011
- 10) MoU SUSTAINET EA and UoN: Renewable energies and Conservation Agriculture Technologies. 2010.
- 11) Camel draft power project. Under EU by KARI (2009).
- 12) Participated in a collaborative initiative between the Department of Environmental and Biosystems Engineering and United Nations Industrial Development Organization (UNIDO) towards development of an integrated package on the status of Agro-machinery in the Country and the way forward (2005).
- 13) Involved in the development of a proposal for collaboration between the Department of Environmental and Biosystems Engineering and Government of China on promotion and suitability of the two-wheeled (walking) tractor to the Kenyan environment (2004).

## C 2-2: Collaborations & Partnership Initiated under the Deanship at the Faculty/School:

- 1) International Council on Systems Engineering (INCOSE). Towards Accreditation and Certification on the Faculty of Engineering – UoN programs. 2022-2026.
- 2) School of Engineering -UoN: ParisTech (Chimie ParisTech, CentraleSupélec, Ecolé des Ponts, AgroParisTech, Institute Optique Graduate School, Mines ParisTec) under French Government on Research and Engineering Training and Infrastructure Development (Engineering & Science Complex) with University of Nairobi. 2017 to date.
- 3) ARUA-PLuS (Africa Research Universities Alliance (Kenya - UoN; Uganda - Makerere; Ghana and Nigeria) with Phoenix (Arizona University – USA); London (Kings College – UK) and UNSA (Sydney – Australia). Design & Development of Engineering Doctoral College on Thematic Strength across the African Universities. 2020 to date.
- 4) Kenya National Highways Authority (KeNHA) with Department of Civil and Construction Engineering (CCE). Collaboration in: Research and postgraduate training. 2019 to date.
- 5) Isuzu Kenya with Department of Mechanical and Manufacturing Engineering (MME). Motor Vehicles Body Inspection. 2019 to date.
- 6) UNOOSA / AVIO and Department of Electrical and Information Engineering (EIE). CubeSat Deployment. Ventilator Development - 2019 to date; spearheaded by EIE & MME.
- 7) MoE and CAE/SoE (Under Department of Geospatial and Space Technology - GST). A Tracer study on Engineering graduates job placement in Kenya. 2018 to date
- 8) Massachusetts Institute of Technology (MIT) & Department of Environmental and Biosystems Engineering (EBE). Water Resources and Engineers Without Borders (EWB) 2015 to date.

## D: RESEARCH GRANT AWARDS, RECOGNITION AND PUBLICATIONS

### D1: RESEARCH GRANT AWARDS (2005 – Current)

**Fundings sourced from;** Global Centre on Adaptation (GCA); UKRI – Innovate UK; European Union (EU); ERASMUS + & Edulink II; Inter University Council of Eastern Africa (IUCEA) for Lake Victoria Research initiative (VICRES); National Council for Science and Technology (NCST); United Nations Educational, Scientific and Cultural Organization (UNESCO) and Deans Committee funds: All sources geared towards: Sustainable development; Mechanization; Energy; Value Addition; Postharvest Technologies and Irrigation & Water Harvesting (2005 to date) namely;

- 1) Majico Ltd, INNO\_NEAT Ltd, UoN and Kenyatta University; Development of Repurposed Energy Solutions for Solar Water Kiosks Systems and Testing, Improvement and Piloting of Water Kiosks Systems. **2024-2026. - Euro 171,361; Ongoing.**
- 2) Design and Development of a Hybrid Energy Powered Smart Irrigation System. Aston University (UK); University of Nairobi (Kenya) and Solargen Technology Limited (Kenya – Industrial Partner) on Africa Agri-tech Knowledge Transfer Partnership (AAKTP) in: **2023-2024** Value: £139, 472 (Kshs. 21 Million). **Completed.**
- 3) Enhancing and Scaling up Climate Adaptation for Resilient Infrastructure in Kenya and the East AfricaRegion. In: Global Centre on Adaptation (GCA). Value: 1 million Euro. **2022-2025; Ongoing.**
- 4) Small Scale Crop Mapping Using Machine Learning / Artificial Intelligence. Kenya Space Agency (KSA).Research Chair. Value US\$5000. November; **2021-2022. Completed.**
- 5) Energy – Agro-food Synergies in Africa: New Educational Models for Universities. Workshop in Italy 11<sup>th</sup> – 19<sup>th</sup> January 2014. EDULINK II - European Union (EU) funded project. Value: US\$ 80,000 for 3 years. **Completed-2017.**
- 6) Water Harvesting for Sustainable Food and Nutritional Security (WHENFS) in Semi-Arid Kitui West District. Use of roof top and pan water harvesting for greenhouse crop production through drip irrigation. National Council for Science and Technology (NCST) funded. 2011. Value: US\$ 85,000 for 3 years. **Completed-2014.**
- 7) Water Harvesting for Sustainable Environment, Food Security and Community Development in Kenya –

Mbooni and Kajiado, UNESCO funded. 2012-2014. Value: US\$ 48,000 for 2 years.

- 8) Agricultural Technologies for conservation tillage in semi-arid Rachuonyo District. Lake Victoria Research Initiative (VICRES) and Inter-University Council of Eastern Africa (IUCEA) funded. **2005 – 2010. Completed.** Value: US\$ 36,000 for 3 years.
- 9) Development and design of conservation tillage tools. Deans Committee UoN funded. **2007 – 2011. Completed.** Value: US\$ 6,000 for 2 years.

### D3: AWARDS & RECOGNITION

- 1) Certificate of excellence in Reviewing. Asian journal of advanced research and reports. **2023,**
- 2) Vice Chancellor award of excellence. Position 3, teacher of the year category. **2022,**
- 3) Certificate of recognition. CAE. Leading in the accreditation of BSc Biosystems Engineering curriculum by the regulators in 2016. **2021 &**
- 4) Certificate of excellence in Reviewing. Journal of applied science and technology. **2018.**

### D3: RESEARCH PUBLICATIONS

I have over 150 Scientific Research Publications in; Refereed Journals, Book Chapters, Workshop, Seminars, Conference Proceedings and Technical Manuals namely;

#### D 3-1: Peer Reviewed and Refereed Journal Papers:

##### 2004-2024

- 1) Mwititi, F., **Gitau, A.,** & Mbugue, D. (2024). Evaluation of artificial neurocomputing algorithms and their metacognitive robustness in predictive modeling of fuel consumption rates during tillage. Computers and Electronics in Agriculture, 224, 109221. <https://doi.org/10.1016/j.compag.2024.109221>
- 2) Martin M. Nanje; **Ayub N. Gitau;** Duncan O. Mbugue (2024). Drivers for mechanizing potato harvesting in Kenya: insights from Nyandarua County farming - Academia Engineering <https://doi.org/10.20935/AcadEng6231>
- 3) Martin M. Nanje; **Ayub N. Gitau;** Duncan O. Mbugue (2024). “*Spatial Analysis of Factors Influencing Potato Mechanization Suitability in Nyandarua County.*” Volume. 9 Issue.10, October-2024 International Journal of Innovative Science and Research Technology (IJISRT), 1572-1580, <https://doi.org/10.38124/ijisrt/IJISRT24OCT1333>
- 4) Martin M. Nanje; **Ayub N. Gitau;** Duncan O. Mbugue (2024). *Multi-Criteria Approach to Determine the Suitability of Potato Harvesters: Case Study Application of Motorcycle Drawn in Nyandarua County, Kenya* ., - available at Research Square <https://doi.org/10.21203/rs.3.rs-4024268/v1>
- 5) Mwititi, F. M., **A. N. Gitau,** and D. O. Mbugue (2023). Effects of soil- tool interaction and mechanical pulverization of arable soils in tillage - a review. Agricultural Engineering International: CIGR Journal, 25 (3):75-94. <http://www.cigrjournal.org>
- 6) Nyakiti, G.O., **Gitau, A.N.,** Mutuli, D. A. (2023). Shear Stress Behavior of Rice Growing Vertisols at Mwea Irrigation Scheme in Kenya. Journal of Engineering in Agriculture and the Environment (JEAE). ISSN 1562-6946 Volume 9. No 2. 2023 <https://doi.org/10.37017/jeae-volume9-no 2.2023-1>
- 7) Kimani, P.K., **Gitau, A.N.,** Mbugue, D.O. and Agullo, J. O. (2023). Modelling Moisture Sorption Isotherms of Superabsorbent Polymer Fabric for Desiccant Drying of Crops. Hindawi Adsorption Science & Technology Volume 2023, Article ID 9992832, 12 pages. August 2023. <https://doi.org/10.1155/2023/9992832>
- 8) Mwititi, F.M.; **Gitau, A.N.;** Mbugue, D.O., Misiewicz, P. and Njoroge, R. (2023). Mechanized Tillage-Induced Compaction and its Effect on Maize (*Zea Mays* L.) Growth and Yield - A Comprehensive Review and Analysis. ISSN: 00845841 Volume 54, Issue 07, July, 2023 14685 AMA. [Agricultural Mechanization in Asia](#)
- 9) Abich, S.O., **Gitau, A.N.,** Nyaanga, D.M. (2022). Effect of soil compaction on physico-mechanical properties of silt loam soils of Njoro, Kenya AgricEngInt: ISSN 1682-1130. CIGR Journal Open access at

- 10) Ndisya, J.; **Gitau, A.**; Roman, F.; Mbuge, D., Sturm, B., Hensel, O. (2022). Simulation of transient heat transfer during forced convection cooling of cocoyam (*Colocasia Esculenta* (L.) Schott) tubers. Vol. 8, issues 12, E12360. Elsevier at Science Direct Heliyon. <https://doi.org/10.1016/j.heliyon.2022.e12360>.
- 11) Mwititi, F.M.; **Gitau, A.N.**; Mbuge, D.O. (2022). Edaphic Response and Behavior of Agricultural Soils to Mechanical Perturbation in Tillage. *Agri-Engineering 2022*, Vol (4), no. 23 335–355. ISSN 2624-7402. <https://doi.org/10.3390/agri-engineering-4020023>
- 12) Kimani, P.K., Mbuge, D.O. **Gitau, A.N.** (2022). Properties of Nonwoven Fabrics Containing Immobilized Superabsorbent Polymer Particles for Air Conditioning in Grain Dryers. *Applied Engineering in Agriculture* Vol. 38(2): 395-400 © 2022 American Society of Agricultural and Biological Engineers (ASABE); ISSN 0883-8542 <https://doi.org/10.13031/aea.14553>.
- 13) Abich, S.O., **Gitau, A.N.**, Nyaanga, D.M. (2022). Modeling Subsoiling Draft Requirements Using Dimensional Analysis. *Journal of Engineering in Agriculture and the Environment (JEAE)*. ISSN 1562-6946 Volume 8. No 2. 2022. <https://doi.org/10.37017/jeae-volume8-no2.2022-4>.
- 14) **Gitau, A.N.** (2022). Role of Academia-Industry Linkage in Engineering the Future. In: *Engineering in Kenya*. <https://www.ikenya.org/no.009-2022> ; ISSN:2710-3951. Pgs 36-37.
- 15) Abich, S.O., **Gitau, A.N.**, D.M. Nyaanga, D.M. (2021). Prediction of Subsoiling Draft Requirements of Silt Loam Soils from Empirical Data: Artificial Neural Network versus Multiple Linear Regression. *Journal of Engineering in Agriculture and the Environment (JEAE)*. ISSN 1562-6946 Volume 7. No 2. 2021. <https://doi.org/10.37017/jeae-volume7-no2.2021-6>.
- 16) Ndisya, J.; **Gitau, A.**; Mbuge, D.; Arefi, A.; Bădulescu, L.; Pawelzik, E.; Hensel, O.; Sturm, B. (2021). Vis-NIR Hyperspectral Imaging for Online Quality Evaluation during Food Processing: A Case Study of Hot Air Drying of Purple-Speckled Cocoyam (*Colocasia esculenta* (L.) Schott). *Processes* **2021**, 9, 1804. <https://doi.org/10.3390/pr9101804>.
- 17) Mutuli, G.P. Mbuge, D.O. **Gitau, A. N.** (2021). Effect of humidity on Aflatoxin contamination on selected African leafy vegetables. *Journal of Food Science and Technology. J Food Sci Technol*. Springer 2021. <https://doi.org/10.1007/s13197-021-05293-0>.
- 18) **Gitau, A.N.** (2021). Inside Iconic University of Nairobi School of Engineering. In: *Engineering in Kenya*. <https://www.ikenya.org/no.004-2021> ; ISSN:2710-3951. Pgs 45-47.
- 19) Mutuli, G.P., **Gitau, A. N.**, Mbuge, D.O. (2020). Convective Drying Modelling Approaches: A Review for Herbs, Vegetables, and Fruits. *Journal of Biosystems Engineering*. South Korea; Vol. 45. No. 4 pp 197-212 @ 2020. <https://doi.org/10.1007/s42853-020-00056-9>; ISSN 2234-1862.
- 20) Mutuli, G.P. Mbuge, D.O. **Gitau, A. N.** (2020). Mathematical modelling, moisture transport, Shrinkage and nutrient content properties in Drying selected African leafy vegetables. *ASABE Research. Applied Engineering in Agriculture*. 36(1): 95-104. (<https://doi.org/10.13031/aea.13532>) @2020.
- 21) Ndisya, J., Mbuge D., Kulig, B., **Gitau A.**, Hensel, O., Sturm, B. (2020). Hot air drying of Purple fleshed Cocoyam (*Colocasia esculenta* (L.) Schott) slices: Optimization of drying conditions for improved product quality and energy savings. Elsevier limited. *Thermal Science and Engineering Progress* (2020), doi: <https://doi.org/10.1016/j.tsep.2020.100557>
- 22) Joselyne, N. M., Waweru, M., **Gitau, A. N.**, Alphonse, U., & Patrick, M. (2020). Evaluating Anaerobic Digestion Technology in Reducing the Quantity of Solid Waste: Case of Kigali Dumpsite. *Journal of Geoscience and Environment Protection*, 8, 204-220. ISSN: 2327-4344 <https://doi.org/10.4236/gep.2020.85013>.
- 23) Kirawa, L. S.; **Gitau, A. N.**, Gatari, M. J. (2020). Comparative Evaluation of the Chemical Composition of Biogas Digestate Slurries Under Varying Feedstocks. doi: <https://doi.org/10.37017/jeae-volume6-no1.2020-6.80-94> @ 2020.
- 24) Mwonga, N.K., **Gitau, A.N.**, Mutua, J.M. and Mwangi, S.T. (2019). Optimization of Specific Draft Requirement and Hitch Length for an Animal Drawn Sub-Soiler: A Case of SandyClay Loam Soils. *Open Journal of Optimization*, 8, 83-99. <https://doi.org/10.4236/ojop.2019.83008>
- 25) **Gitau, A.N.** and Mwangi, S.T. (2019). Mechanization Status in Africa: An Overview. In: *Journal of Engineering in Agriculture and the Environment (JEAE)*. ISSN 1562-6946. <https://doi.org/10.37017/jeae-Vol-5-no2.2019-6>.
- 26) Mwangi, S.T., **Gitau, A.N.** and Muchiri, G. (2018). Effect of Chisel Ploughing on Physical and Mechanical Soil



- Properties on a Maize Cropped Field. International Journal of Emerging Technology and Advanced Engineering. [www.ijetae.com](http://www.ijetae.com) (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 8, Issue 11, November 2018).
- 27) **Gitau, A.N.**, Wilba, S.N., Mbugue, D.O. and Mwangi, S.T. (2018). Modelling variable cost of Tractors. A case study of ten tractor models in Juba Southern Sudan. ResearchGate. AMA Spring 2018 Vol. 49 No. 2. ISSN 0084-5841. Pp 104-111.
  - 28) Njenga; J. N., Mbugue, D.O.; **Gitau, A.N.**, Kogi-Makau, W., Sassi, M. (2017). Quality assurance systems in African partner Universities within the energy agro-food synergy project. ISBN 978-88-96189-47-4. NAF- IFR. <http://nafirn.weebly.com/>
  - 29) Otieno, J.O., Omuto, C.T., **Gitau, A.N.** (2017). Performance evaluation and economic analysis of solar photo-voltaic water pumping systems: Case of Abakore borehole water supply system in Kenya. International Journal of Water Resources and Environmental Engineering. ISSN 2141-6613. <http://www.academicjournals.org/IJWREE>
  - 30) Sylvia I. M., D. O. Mbugue, **A. N. Gitau**, U. N. Mutwiwa, I. N. Wekesa (2016). Characterization of brewery waste water and evaluation of its potential for biogas production. AgricEngInt: CIGR Journal Open access at <http://www.cigrjournal.org>. Vol. 18, No. 3. September; 2016.
  - 31) Ndisya, J.M., **A. N. Gitau**, D. O. Mbugue, A.W. Hiuhi (2016). The Effect of the Operational Parameters on the Draft Requirement of Ripping in a Sandy Clay Soil. Open Journal of Optimization, 2016, 5, 1-13. Published Online March 2016 in SciRes. <http://www.scirp.org/journal/ojop>; <http://dx.doi.org/10.4236/ojop.2016.51001>. Scientific Research publishing.
  - 32) Hiuhi, A. W., **A. N. Gitau**, D. O. Mbugue, J. N. Mulwa (2015). Optimization of the Angle of Frog in Mouldboard Tillage Operations in Sandy Clay Soil. Open Journal of Optimization, 2015, 4, 131-140. Published Online December 2015 in SciRes. <http://www.scirp.org/journal/ojop>. <http://dx.doi.org/10.4236/ojop.2015.44013>. Scientific Research Publishing.
  - 33) Wachira, G.G., **A. N. Gitau**, M. W. Kimani and B. N. K. Njoroge (2015). Mechanical Properties of SawDust Briquettes of Eucalyptus Tree Species of Different Binders and Press Machines. International Journal of Emerging Technology and Advanced Engineering Website: [www.ijetae.com](http://www.ijetae.com) (ISSN 2250- 2459, ISO 9001:2008 Certified Journal, Volume 5, Issue 4, April 2015) 532.
  - 34) Kimani, M.W., **A. N. Gitau** and D. Ndunge (2015). Rainwater Harvesting Technologies in Makueni County, Kenya. International Journal of Engineering and Science Vol.5, Issue 2 (February 2015), PP39-49 ISSN (e): 2278-4721, ISSN (p):2319-6483, [www.researchinventy.com](http://www.researchinventy.com) 39.
  - 35) Irungu, M.M.W., **Gitau A. N.** and Mutua J.M. (2014). Characterization of the physical parameters of coffee husks towards energy production. *International Journal of Engineering Research and Technology*. IJERTV: 31S060870. ISSN: 2278-0181. 2014, 5: 17-24.
  - 36) Luvai A. K., **Gitau A. N.**, Njoroge B. N. K. and Obiero J. P. O. (2014). Effect of Water Application Levels on Growth Characteristics and Soil Water Balance of Tomatoes in Greenhouses. *International Journal of Engineering Innovation & Research*. Vol. 3, 3: 271-278, ISSN: 2277 – 5668.
  - 37) Makau, W.K., **Gitau, A.N.**, Chege, J.M. Ocharo, R.M., Kamau, H.K., Wambua, J.M. and Luvai, A.K. (2014). Rain Water Harvesting for Enhanced Household Water, Food and Nutritional Security: The Case of Kitui West, Lower Yatta and Matinyani Districts, Kenya. *Journal of Environment and Earth Science*. ISSN: 2224-3216. 2014, 11: 97-106.
  - 38) Maina, J.W., **Gitau, A.N.** and Nyang'aya, J.A. (2013). Diesel Engine Emissions and Performance Characteristics under Cape Chestnut Biofuel . Scientific Research. *Journal of Power and Energy Engineering*, 2013, 1: 9-14.
  - 39) **Gitau A. N.**, Mboya P. O, Njoroge B. N. K., Mburu M. (2013). Optimizing the Performance of a Manually Operated Groundnut (*Arachis hypogaea*) Decorticator. Scientific Research. *Open journal of optimization*. 2013,2: 26-32
  - 40) Kimani P.K., Njoroge B. N. K., **Gitau A.N.** 5:2 (2012) Use of UASB reactor in treatment of Dairy industry wastewater in New KCC Kitale factory, Kenya – *ICASTOR Journal of Engineering*. 5:2 (2012) 111-125. ISSN-0974-407X.
  - 41) Ondiaka, M. N., Mutua J. M., **Gitau A. N.**, and Njoroge B. N. K. (2012) Quantitative structure-activity relationship biodegradability modeling in bio-filtration of petroleum volatile organic compounds. *E3 Journal of Environmental research and management*. Vol 3 (5). Pp 99-107 (2012). ISSN 2141-7466

- 42) Gakungu, N. K., **Gitau A. N.**, and Njoroge B. N. K.; Kimani M. W., (2012). Solid waste management in Kenya; A case study of Public Technical Training Institutions. *ICASTOR Journal of Engineering* 5:3 (2012) 127-138. ISSN-0974-407X.
- 43) Kinyanjui, B.K., **Gitau A. N.** and. Mang'oli. M. K. (2011). Power development planning model in East Africa. *Journal of strategic planning for energy and the environment*. Taylor and Francis group. Vol. 31: 1, 43-55. ISSN: 1546-0126.
- 44) Mutai, E.B.K., Otieno P. O., **Gitau A.N.**, Mbuge D.O. and Mutuli D.A. (2011). Simulation of the microclimate in poultry structures in Kenya. *Res. J. of Appl. Sci., Eng. and Tech.* 3(7): 579-588, 2011.
- 45) Gichuhi, N.W., **Gitau A. N.**; Mutua J.M.; Kaberere K.K. and. Mang'oli M.K. (2011). Distributed Generation of Green Electricity for Sustainable Rural Electrification in Kenya. *ICASTOR journal of engineering*. Vol. 4. No.1 (2011): 65-77. ISSN-0974-407X.
- 46) **Gitau, A. N.**, Kasisira L. and Mganilwa, Z.M. (2010). Mechanization status in the lake Victoria of East Africa. *Australian Journal of Agricultural Engineering*. 1(5):160-164 (2010). ISSN-1836-9448
- 47) Ali A.A., **Gitau, A. N.**, Hassan M.A., Gumbe L.O. and Gichuki, N.N. (2010). Household solid waste generation and management practices in Nairobi. *Journal of waste management*. Elsevier 30 (2010) 1752-1755.
- 48) Mutai, E.B.K., **Gitau, A. N.** Aganda A.A. and Karuri G.E. (2010). Dynamic modeling of temperatures in poultry structures. *ICASTOR journal of engineering*. Vol. 3 No.2 (2010) 105-120. ISSN-0974-407X.
- 49) **Gitau, A. N.**, Gumbe L.O. and Mwea S.K. (2008). Mechanical behaviour of a hard-setting *luvisol* soil as influenced by soil water and effective confining stress. *Agricultural engineering international the CIGR E-journal*. Manuscript LW 07021. Vol. X March, 2008.
- 50) Akendo I.C.O., Gumbe, L.O. and **Gitau, A. N.** (2008). Dewatering and drying characteristics of water hyacinth (*Eichhornia Crassipes*) petiole. Part II: Drying characteristics. *Agricultural engineering international the CIGR E-journal*. Manuscript FP 07033. Vol. X March, 2008.
- 51) Akendo I.C.O., Gumbe, L.O. and **Gitau, A. N.** (2008). Dewatering and drying characteristics of water hyacinth (*Eichhornia Crassipes*) petiole. Part I: Dewatering characteristics. *Agricultural engineering international the CIGR E-journal*. Manuscript FP 07032. Vol. X February, 2008.
- 52) **Gitau, A. N.** and Gumbe, L.O. (2007). Transition from brittle failure to ductile flow in an irrigatable sandy soil. *Discovery and Inovation journal*. Vol. 19 No. 2 Pg. 140-146. 1015 – 079X.
- 53) Gitau, J. M., Riechi A.R.O. and **Gitau, A. N.** (2007). Effects of Students' Enrolment on Unit Cost of Education. *Pakistan Journal of Social Sciences* 4(1):153-158, 2007. ISSN: 1683-8831.
- 54) **Gitau, A. N.**, Gumbe, L. O. and Biamah E. K. (2006). Influence of soil water on stress-strain behaviour of a compacting irrigatable soil in semi-arid Kenya. *Soil and Tillage Res.* 89 (2006): 144-154 ; Elsevier B.V. The Netherlands.
- 55) **Gitau, A. N.** and Gumbe, L. O. (2004). Alleviating soil hardpan formation for conservation farming – case of semi-arid Kenya. *Euro-Asia Journal of Applied Sciences*. Vol. 2 No. 3 (ISSN: 1450-202X).

### D 3-2: Chapter in Books:

- 1) **Agricultural, Biosystems, and Biological Engineering Education Global Perspectives and Current Practice (2024). chapter 6 (9 pages) Curriculum Design and Application in ABE Education By Ayub N. Gitau, Duncan O. Mbuge** <https://doi.org/10.1201/9780429150111>
- 2) **Optimization of Biogas Production from Brewery Wastewater (2017).** LAMBAERT Academic Publishers. ISBN: 978-3-659-78309-8.
- 3) **Bio-Energy in East Africa: Challenges and Opportunities (2016).** Biogas from Livestock Waste (Cow Dung). Institutional Case Study. Bio-energies in East Africa between challenges and opportunities. Pg. 127-137. ISBN 978-88-95458-98-4.
- 4) **MINAGRI Republic of Rwanda (2010).** Rwanda irrigation Masterplan (RIMP). 240 p. ISBN: 978-92-9059-278-5.
- 5) **Mechanical Behaviour of Hardsetting Soils (2010):** The critical state soil mechanics approach to soil tillage. LAMBAERT Academic Publishers. ISBN: 978-3-8433-7027-1
- 6) **IIRR and ACT (2005).** Conservation agriculture. A manual for farmers and extension workers in Africa. International Institute of Rural Re-construction, Nairobi; Africa Conservation Tillage Network, Harare. Pgs 35-

### D 3-3: Technical Manuals:

**Publication for farmers and Extension Officers in Eastern Africa (Feb-Oct 2010) - Sustainet EA** (Sustainable Agriculture Information Initiative). Funded by; FAO and GTZ, GOK and ACT.

**ISBN: 978-9966-1533-**

1. Conservation Agriculture	-0-2
2. Soil and Water Conservation	-8-8
3. Integrated Agriculture Systems	-9-5
4. Nine-Seeded Hole Technique	-6-4
5. Farmer Field School (FFS) Approach	-4-0
6. Agro Forestry Practices	-1-9
7. Certification of Organic Products	-2-6
8. Organic Pineapple Production	-7-1
9. Groundnut Production	-5-7

### D 3-4: In Peer Reviewed Proceedings and Webinars:

- 1) **Gitau, A.N. and Mwit, F.M. (2024).** Engineering Profession and Accreditation in Kenya and the Region. A webinar at the Faculty of Engineering and Life Sciences, University of Selangor, Malaysia on 17<sup>th</sup> October 2024.
- 2) **Gitau, A.N. (2024).** Mechanized Systems, Engineering Profession and Accreditation. Presentation made during the UoN-Beihang University Exchange Programme Friday 12<sup>th</sup> July, 2024.
- 3) **Gitau, A.N. and Nanje, M. (2022).** Impacts of Climate Change on Smart Climate Agriculture. In: Rethinking and Reshaping Infrastructure Development and Priorities for Africa. Association of Consulting Engineers of Kenya. 26-28 Oct 2022.
- 4) Nanje M., **Gitau, A.N.** and D.O. Mbuge (2022). Baseline Survey On Current Level of Mechanization and Ware Potato Cultivation and the Labour Intensive Activity In Production Chain - Nyandarua County. In: Engineering for Sustainable Development. Engineering Conference. UoN. 24-28<sup>th</sup> Oct 2022.
- 5) Mwit, F.M.; **Gitau, A.N.**; Mbuge, D.O. (2022). Tractor-Implement Piezoelectric Energy Harvester for Multi-Resonant Draft Vibrations in Tillage. A short Communication on a proposed State of Art Study. In: 4<sup>th</sup> Annual International Engineering Conference. Emerging Research and Technologies in Engineering for Sustainable Development of Society by Faculty of Engineering. 27<sup>th</sup> October, 2022.
- 6) John Ndisya, **Ayub Gitau**, Franz Roman, Duncan Mbuge, Boris Kulig, Barbara Sturm, Oliver Hensel (2021). Convective Cooling of purple-speckled Cocoyam (*Colocasia Esculenta* (L.) Schott): Influence of Air Velocity, Corm Size and Orientation on Cooling Behaviour. 5<sup>th</sup> International Conference of the International Commission of Agricultural and Biosystems Engineering (CIGR). Hosted by the Canadian Society for Bioengineering (CSBE/SCGAB) Virtually from Québec City, Canada – May 11-14, 2021.
- 7) **Gitau A. N. (2020).** Future Tools for Agricultural Mechanization. KeSEBAE Annual Conference.
- 8) **Gitau, A. N. (2018).** Value Chain in Kenya Tillage Systems: Towards Agenda 2063. Pan African Society for Agricultural Engineering (PASAE) Conference.
- 9) **Gitau, A.N.** and Mwangi, S.T. (2018). Mechanization Status in Africa: An Overview. In: Pan-Africa Society for Agricultural Engineering (PASAE). ASABE conference.
- 10) **Gitau, A. N., W. Kogi-Makau, M. W. Kimani, D. Ndunge (2016).** Biogas from Livestock Waste (Cow Dung). Institutional Case Study. Bio-energies in East Africa between challenges and opportunities. Edited by Marco Setti, Daria Zizzola. *Proceedings of the Final Conference on the Energy-Agro-Food Nexus in East Africa. ACP-EU Cooperation Programme in Higher Education (EDULINK). A programme of the ACP Group of States, with the financial assistance of the European Union.* eISBN 978-88-99688-03-5.
- 11) **Gitau, A. N.**; Mbuge, D.O.; Kimani, P.K. (2016). Towards Biosystems Engineering in Kenya. Proceedings of



ASABE. International Conference. Stellenbosch University. SA.

- 12) Muchiri, G., **Gitau, A. N.**, and Mkomwa, S. (2014). Mechanization for Conservation Agriculture Up-scaling: Relevant Policies and Strategies. Presented on the 1st Africa Congress on Conservation Agriculture congress in Lusaka -Zambia 18-21 March, 2014
- 13) Kuloba, P.W., Gumbe, L. O. , Okoth, M.W., **Gitau, A. N.** and Lumadede, H. (2014). Mechanical model for the reduction of polyphenols in green tealeaf during withering in low-temperature Nitrogen plasma environment. Proceedings of 2014 International Annual Conference on Sustainable research and Innovation. ISSN 2079-6226. JKUAT.
- 14) Muchiri, G., **Gitau, A. N.**, Kanali, C.L. and Gichuki, F. N. (2013). Application of the goal programming model in quantifying the effect of tillage and equipment on smallholder farm productivity Paper on Effect of Tillage Equipment on production, a model for Semi Arid Smallholder Agriculture Paper presented at Nakuru ACT conference on 4<sup>th</sup> -6<sup>th</sup> December 2013.
- 15) **Gitau, A. N.** and Gumbe, L. O. (2005). Mechanical behaviour of hard setting soils of semi-arid Kenya. In: Proceedings of the 3<sup>rd</sup>, World Congress on Conservation Agriculture, Nairobi Kenya. Linking production, livelihoods and conservation. 3<sup>rd</sup> -7<sup>th</sup> Oct., 2005. CD-ROM. Pp 62-70.
- 16) **Gitau, A. N.** and Gumbe, L. O. (2004). Alleviating hard pan formation in the semi-arid Kenya soils for conservation farming. In: Proceedings of a Regional Workshop on Conservation Agriculture and Rainwater Harvesting. 17<sup>th</sup> – 19<sup>th</sup> Nov., 2004. Ethiopia, Addis Ababa. CD-ROM. Pp 199-215.
- 17) **Gitau, A. N.** and Gumbe, L. O. (2004). Triaxial testing of an agricultural soil. In: Proceedings of the 2004 CIGR International Conference-Beijing, P.R. China. 11<sup>th</sup> - 14<sup>th</sup> Oct. 2004. CD-ROM. Vol. 1. Paper No. 10-114A. I-124. ISBN 7-80167-707-2.
- 18) **Gitau, A. N.** and Biamah, E. K. (2000). Influence of selected tillage operations on draft power and penetration resistance of a crusting soil. In: Morrison, J.E. Jr. (ed), Tillage for Sustainable Crop Production. Proceedings of the 15<sup>th</sup> international soil tillage research org. (ISTRO). July 2-7, 2000. Fort Worth, Texas, USA. pp 106-115.

### **D 3-5: International Workshops, Conferences, Conventions, webinar & Training:**

#### **D 3-5-1 International Workshops, Conferences, Conventions & webinars**

- 1) Institution of Engineers of Kenya (IEK) International Convention October 29<sup>th</sup> – November 1<sup>st</sup> **2024** in Mombasa
- 2) Engineering Profession and Accreditation in Kenya and the Region - A webinar at the Faculty of Engineering and Life Sciences, University of Selangor, Malaysia October 17<sup>th</sup> October **2024**. Virtual Meeting
- 3) 34<sup>th</sup> Annual INCOSE International Symposium 1<sup>st</sup> to 5<sup>th</sup> July **2024**. Dublin Ireland
- 4) AFRETEC'S teaching and Learning workshop. March 11<sup>th</sup> – 14<sup>th</sup> **2024** in Mombasa.
- 5) Delft University of Technology April 23<sup>rd</sup> – 26<sup>th</sup> **2024** in the Netherlands.
- 6) Stakeholder Consultative meeting for Development and Review of Human Resource Management Instruments for University of Nairobi December 18<sup>th</sup> -23<sup>rd</sup> **2023** in Nairobi.
- 7) Engineering Board of Kenya Convention June 14<sup>th</sup> – 16<sup>th</sup> **2023** in Naivasha.
- 8) Leadership Development Training Workshop for UNSA June 12<sup>th</sup> – 13<sup>th</sup> **2023** in Mombasa.
- 9) AFRETEC Annual Conference September 18<sup>th</sup> - 20<sup>th</sup> **2023** in Nairobi.
- 10) Institution of Engineers of Kenya (IEK) Convention November 14<sup>th</sup> -17<sup>th</sup> **2023** in Mombasa.
- 11) The 2023 Annual INCOSE International workshop January 27<sup>th</sup> -31<sup>st</sup> **2023** in California, LA; USA.
- 12) Institution of Engineers of Kenya (IEK) Annual International Convention November 21<sup>st</sup> -25<sup>th</sup> **2022** in Mombasa.
- 13) Inaugural AFRETEC Network Conference November 6<sup>th</sup> – 8<sup>th</sup> **2022** in Kigali Rwanda.
- 14) 4<sup>th</sup> Annual International Engineering Conference. Emerging Research and Technologies in Engineering for Sustainable Development of Society by Faculty of Engineering. 26<sup>th</sup> -27<sup>th</sup> October, **2022**. Virtual meeting.
- 15) The Engineering Journey and the future of Engineering in Kenya. Public Lecture. Professor Emeritus Francis Gichaga. 14<sup>th</sup> October **2022** at University of Nairobi; Manu Chandaria Auditorium – University Towers.
- 16) Enhancing and Scaling up Climate Adaptation for Resilient Infrastructure in Kenya and the East Africa Region.

- In: Global Centre on Adaptation (GCA). Global Africa Adaptation Acceleration Program (AAAP) Inception Workshop Held On September 29<sup>th</sup>- 30<sup>th</sup>, **2022** At Windsor Golf Hotel & Country Club.
- 17) Road Safety Mainstreaming Workshop June 29<sup>th</sup> **2022** in University of Nairobi Towers
  - 18) Kenya Space Expo and Conference June 15<sup>th</sup> -17<sup>th</sup> 2022 in Nairobi, Sarit Centre.
  - 19) 2<sup>nd</sup> World Engineering Day – WED. Theme: Engineering for a Healthy Planet: Celebrating the UNESCO Engineering Report. 4<sup>th</sup> March **2021**. Blended (Virtual and Physical) meeting. Organized by the Institute of Engineers of Kenya (IEK). Held at the University of Nairobi – Towers.
  - 20) National Engineering Students Career Week. Career Focus and Mentorship. Organized by IEK; 8<sup>th</sup> – 12<sup>th</sup> April; **2021**.
  - 21) Kenyan Society of Environmental; Biological and Agricultural Engineers (KeSEBAE) **2021**. Training by KeSEBAE team on Procurement & Contract Management for DRSLP & SIVAP Project Staff. 8<sup>th</sup> – 12<sup>th</sup> February 2021. Naivasha Dairy Technology Training Institute.
  - 22) 1<sup>st</sup> World Engineering Day – WED. Theme: Engineering the Big 4 Agenda. 4<sup>th</sup> March **2020**. Organized by the Institute of Engineers of Kenya (IEK); Engineers Board of Kenya (EBK) and United Nation Educational, Scientific and Cultural Organization (UNESCO). Held at the University of Nairobi – Towers.
  - 23) Kenyan Society of Environmental; Biological and Agricultural Engineers (KeSEBAE) **2020**. Annual Virtual Conference. Engineering The Future. 17<sup>th</sup> Dec 2020.
  - 24) World Engineering Convention (WEC). Melbourne – Australia. 20<sup>th</sup> to 22<sup>nd</sup> November, **2019**.
  - 25) 5th UNESCO Africa Engineering Week / 3rd Africa Engineering Conference & 25th IEK International Conference. 17<sup>th</sup> -21<sup>st</sup> September 2018 - Pride-Inn Hotel Mombasa –Conference Programme *Harnessing Blue Economy for Accelerated Economic Growth*.
  - 26) Kenyan Society of Environmental; Biological and Agricultural Engineers (KeSEBAE) **2019**. Annual Conference. Engineering the Big 4 Agenda. 14<sup>th</sup> – 15<sup>th</sup> November 2019. UoN – Tower.
  - 27) The 1<sup>st</sup> Pan Africa Society for Agricultural Engineering (PASAE) held a Conference from 25<sup>th</sup> to 28<sup>th</sup> March **2018**, at the Southern Sun Mayfair hotel, Nairobi Kenya. The conference was hosted by the Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE).
  - 28) ERASMUS + Staff mobility programme workshop May, 21<sup>st</sup> – 25<sup>th</sup> **2017** in Italy.
  - 29) Consultative Meeting on a Mechanization Strategy. New models for sustainable agricultural mechanization in sub-Saharan Africa. 30<sup>th</sup> November – 3<sup>rd</sup> December **2016** Venue (Safari Park Hotel) Nairobi, Kenya. Organized by: FAO; UNIDO; WB; AGRA & ACT.
  - 30) America Society of Agriculture and Biological Engineers (ASABE) October 23<sup>rd</sup> – 29<sup>th</sup> 2016 in Stellenbosch University, South Africa.
  - 31) Energy Agro-food Conference. February 16<sup>th</sup> -20<sup>th</sup> **2016** in Ethiopia, Mekelle University.
  - 32) Energy – Agro-food Synergies in Africa: New Educational Models for Universities. Workshop in Italy 11<sup>th</sup> –19<sup>th</sup> January **2014**. EDULINK II - European Union (EU) funded project.
  - 33) Green Investment Guidelines brainstorming workshop October 22<sup>nd</sup> – 25<sup>th</sup> **2013** in Amboseli, Kenya
  - 34) Rapid Result Initiative (RRI) refresher training for continued improvement – August **2013**.
  - 35) Intellectual Property Rights sensitization workshop for HoDs July 17<sup>th</sup> -18<sup>th</sup> **2013** in Nairobi.
  - 36) UNDP GEF Small Grants Programme. Evaluation training workshop - Gilgil – April **2012** and Monitoring Nyeri, November, **2012**.
  - 37) Writeshop workshop on the development of manuals on good Agricultural practices. October 20<sup>th</sup> – 23<sup>rd</sup> **2010** in Naivasha, Kenya.
  - 38) Regional workshop on; Pollution/Heavy Metal Seminar. Contributed in Conservation Tillage Technologies for Reduction of Lake Victoria Pollution. VICRes. Jinja Nile Resort, Uganda, 21<sup>st</sup> -24<sup>th</sup> March, **2007**.
  - 39) Regional workshop for development of a PhD curriculum on Dry-land Resources Management. Contributed inputs in engineering technologies and the environment. KCB –Karen, 4<sup>th</sup> -6<sup>th</sup> March, **2007**.
  - 40) International R&D workshop on Agricultural Engineering Technologies, October 18<sup>th</sup> -31<sup>st</sup> in Israel.

### D 3-5-2 Training

- 1) Management Induction for Deans and Associate Deans September 1<sup>st</sup> -2<sup>nd</sup> **2022** in Naivasha.
- 2) Training on disposal of idle assets, UoN **2019**
- 3) Internal Quality Auditors refresher training, January 12<sup>th</sup> – 13<sup>th</sup> **2016** in Kenya School of Monetary Studies

- 4) Energy – Agro-food Synergies in Africa: New Educational Models for Universities Training in Ethiopia, Mekelle University August 31<sup>st</sup> – 5<sup>th</sup> September **2015**.
- 5) Quality Management System Lead Auditors Course June 9<sup>th</sup> – 13<sup>th</sup> **2014** in Nairobi
- 6) Netfund Green Innovations Award National Steering Committee Leadership Training 16<sup>th</sup> to 17<sup>th</sup> January 2014
- 7) ISO refresher training on Continued improvement Nakuru- Feb **2012**.
- 8) Training in Q-pulse for ISO data analysis. **2011**.
- 9) Internal Quality Auditing Course July 8<sup>th</sup> to 10<sup>th</sup> 2009. Naivasha
- 10) Training in Rapid Results Initiatives (RRI) and Performance Contracting Appraisal (PCA). Through ministry of education staff. 2<sup>nd</sup> November, **2008**.
- 11) Training in pedagogy: From Kikuyu campus (UoN) to CAE staff. 15<sup>th</sup> -17<sup>th</sup> October, **2008**.
- 12) International R&D workshop / training in leadership and management of agricultural engineering technologies and mechanization. Held in conjunction with the agricultural engineering institute at the ministry of agriculture and rural development. 18<sup>th</sup> –31<sup>st</sup> October, **2006**. Volcani Campus, Bet Dagan, Israel.
- 13) Proposal write-up for funding. Kenya Agricultural Productivity Project (KAPP) competitive grant system. Kenya Institute of Administration, Nairobi, Kenya. 10<sup>th</sup> – 19<sup>th</sup> April, **2006**.
- 14) Write-shop on a manual for conservation tillage for farmers and extension workers in Africa. Contributed in editing and provision of technical information for the chapter on: Tillage tools, equipment and other land preparation machinery for conservation tillage. 17<sup>th</sup> -30<sup>th</sup> April, 2005.
- 15) Introduction to Biotechnology and Bio-safety policy analysis. October 24<sup>th</sup> – 28<sup>th</sup>, **2005**. ACTS. World Agro-forestry Centre, Kenya.

## E: POST GRADUATE SUPERVISION AND EXTERNAL EXAMINATION

### E1: SUPERVISION AND EXAMINATION

#### E 1-1: PhD Candidates – Supervision and Examination:

##### [I] PhD – Supervision to Completion (*letters in parenthesis represents year of graduation*)

- 1) **Frankline Mwiti (2024)**. Evaluation and Simulation of Tractive and Soil-Tool Interaction in Tillage: Case of Hard-Setting Ferralsols in North-rift Kenya
- 2) **Samuel Otieno Abich (2024)**. Modelling Wheel Compaction Effects on Tillage Power Requirement: Case of subsoiling.
- 3) **Peter Kang’ethe Kimani [2024]**. Development and modelling of a Hybrid Desiccant Unit for Grain Drying and Storage.
- 4) **John Mulwa Ndisya (2021)**. Modelling and Optimization of Convective Cooling and Drying for Preservation of Purple-Speckled Cocoyam Cultivar Grown in Kenya.
- 5) **Gibson Mutuli Shiyonzo (2020)**. Modelling and Process Optimization in Application of Super Absorbent Polymer in Drying: Use of Fluidized Bed Drier.
- 6) **Syvia Injete Murunga (2017)**: Characterization and modeling of brewery waste water towards biogas production.
- 7) **Kuloba W. Wafula (2014)**. An investigation of plasma Environment effect on the polyphenol concentration during manufacture of Kenyan Tea.
- 8) **Gichuki Muchiri (2012)**. Effect of Tillage Equipment on maize production. A model for semiarid small holder agriculture.

##### [II] PhD – Supervision in Progress (*letters in parenthesis represents year of registration*)

- 1) **Martin Mang’eni Nanje [F80/61882/2020]**. Modelling and Optimization of Mechanized Potato Harvesting Technology for Small and Medium Scale Farms in Kenya
- 2) **Joseph Waweru [F80/92282/2013]**. Effective Process Design Model for Sorghum Bi-oil Production and Conversion To Bio-fuel.
- 3) **Agullo Januarius Ondiek [F80/80545/2010]**. Environmental Simulation Model of A Greenhouse: A Three

**E 1-2: MSc Candidates – Supervision and Examination:**

**[I] MSc – Supervision to Completion** (*letters in parenthesis represents year of graduation or receipt of letter of award*)

- 1) **Patrick Njiru Waganagwa (2024)** Comparative Evaluation of the Penman-Monteith and Blaney-Criddle Methods of Evapotranspiration.
- 2) **Gordon Ochieng Nyakiti (2022)**. Analysis of Shear stress behavior of rice growing vertisols in Mwea Irrigation Scheme.
- 3) **Nikuze Marie Joselyne (2020)**. Evaluating Anaerobic Digestion Technology in Reducing the Quantity of Solid Waste. A case Study of Kigali Dumpsite. Rwanda.
- 4) **Spencer Kirawa Lusi (2020)**. Comparative Evaluation of the Components of Biogas Digestate Slurries and Effects on Agricultural Soils.
- 5) **Jephter Ongige Ondieki (2020)**. Mapping Radioactive Minerals Using Remote Sensing: A case Study of Mrima Hills – Kwale County, Kenya.
- 6) **Saman Nicola Wilba Nicola (2019)**. Modelling Variable Cost of Tractors: Case Study of Ten Tractor Models in Juba- Southern Sudan.
- 7) **Nicodemus Kyalo Mwonga (2019)**. Optimisation of Specific Draft Requirement and Hitch Length for an Animal-drawn Sub-Soiler: A case study of Sandy Clay Loam soils.
- 8) **James Origa Otieno (2018)**. Performance Investigation of Solar Photo-Voltaic Water Pumping Systems: A case Study of Abakore Borehole Water Supply System: Wajir County Kenya.
- 9) **Simon Thuku Mwangi (2018)**. Effect of Chisel Ploughing on Physical and Mechanical Soil Properties on a Maize Cropped Field
- 10) **Frankline Muriungi Mwiti (2018)**. Optimization of the Performance of Hybrid Solar Dessicant drier in Grain Storage Systems.
- 11) **Kennedy Wandera Makudiuh (2016)**. Rake Angle Effect on the Draft Power Requirement for Conservation Tillage Tools.
- 12) **Peter Kangethe Kimani (2016)**. Determination of Moisture and Temperature Variation in Wet Grains by Desiccant Drying.
- 13) **Godffrey Gachuri Wachira (2015)**. Optimising the Utilization of Saw Dust of Eucalyptus Species as a Fuel in Tea Industry.
- 14) **Eliafie Wilson Mwanga (2015)**. Stabilization of Silt Clay Soil Using Molasses for Small Dam Embankment Construction as inner Zone. Tanzania.
- 15) **John Mulwa Ndisya (2015)**. Numerical Simulation of Soil Resistance to Ripping in a Sandy Clay Soil:
- 16) **Angela Wambui Hiuhu (2015)**. Optimization of the Angle of Frog in Mouldboard Tillage Operations in Sandy Clay Soil.
- 17) **Jedidah Wandia Maina (2014)**. Diesel Engine Emmission and performance characteristics under cape Chestnut Biofuel.
- 18) **Luvai Kioko Allois (2014)**. Evaluation of Water Balance Under Drip Irrigated Tomatoes In Semi-Arid Environment: A Case Study in Kitui County.
- 19) **Margaret Wangari Irungu Mbugua (2014)**. Characterization of the Physical Parameters of Coffee Husks Towards Energy Production.
- 20) **Mary Ondiaka Nelima (2011)**. Modelling Waste Gas Biofiltration Process for Industrial use in Kenya.
- 21) **Gakungu Ndungu Kairu (2011)**. Solid Waste Management: A case study of public technical Training Insitutions in Kenya.
- 22) **Otieno Paul Mboya (2009)**. Optimizing the Performance of a Manually operated Groundnut Decorticator
- 23) **Omondi Innocent Charles Akendo (2008)**. De watering and Drying Characteristics of water Hyacinth (*Eichhornia Crassipes*) petiole.
- 24) **Naomi Waithera Gichuhi (2008)**. Distributed Generation of Green Electricity for Sustainable Rural Electrification: A Case Study of Tala Area in Kangundo - Kenya
- 25) **Boniface Kamanda Kinyanjui (2008)**. Optimization of power plant dispatch and capacity expansion in Kenya.



**[II] MSc – Supervision in Progress** (*letters in parenthesis represents year of registration*)

- 1) **Audrey Sherry Magina [F56/35899/2019]**. Modelling of Thermal Energy Storage for Solar Cookers.
- 2) **Cherry Apondi [F56/36030/2019]**. Optimization of the Solar Dryer to Prevent Aflatoxin Contamination in Maize.
- 3) **Silas Kipngetich Langat [F56/35770/2019]**. Optimization of Cassava Chips Sizes for Drying Rates in Natural and Convective Air Flow: Case of Solar Drier.
- 4) **Mutai Weldone KipKoech [F56/65022/2010]**. Performance evaluation of a power tiller under field conditions

**E2: EXAMINATION (THESIS AND SCRIPTS)**

**E 2-1: External Examiner for Undergraduate (BSc) and Postgraduate (MSc and PhD) Examination Scripts:**

- 1) Egerton University, Department of Agricultural Engineering. 2011 to 2018
- 2) JKUAT. Biomechanical and Environmental Engineering. 2012 to date (MSc. and PhD)) and 2015-2019 (BSc).
- 3) University of Zimbabwe: Dept. of soil science and Agricultural Engineering. 2015 to 2019 – BSc; MSc and PhD.

**E 2-2: University of Nairobi - Internal Examiner (But not Supervisor) / Board Member:**

- 1) **Orodi Odhimbo – MSc (2008) - EBE**. Application of GIS on sugar biomass cover. *Internal examiner.*
- 2) **Duncan Onyango Mbugu - PhD (2009) - EBE**: Predicting service life of plastic lining for water reservoir using visco-elasticity. *Internal examiner.*
- 3) **James Gathitu Muturi – MSc (2011) – CCE**. An assessment of IWRM of Ewaso Narok river catchment area. *Board member.*
- 4) **Rono Benard Kiplangat – MSc (2012) – EBE**. Application of NIR spectroscopy in engineering soil classification. *Internal examiner.*
- 5) **John Paul Obiero – PhD (2013)- EBE**. Pedotransfer Functions for saturated hydraulic conductivity for surface runoff modeling. *Board member.*
- 6) **Ayub Kariuki Theuri – MSc (2013) – CCE**. Sequencing batch reactor in treatment of slaughterhouse wastewater effluent. *Board member.*
- 7) **Peter Ndungu Muiruri – MSc (2014) – CCE**. An assessment of IWRM practices in Gucha river catchment. *Board member.*
- 8) **Ng’eno Jeremiah Kipruto – MSc (2015) - INS**. Urban Air Quality in the City of Nairobi, Kenya: Application of Dispersive X-Ray Fluorescence and Principal Component Analysis. *Internal examiner.*
- 9) **Anne Wambui Mutahi – MSc (2016) - INS**. Aerosols Impact at High Altitude: A Case Study at 4800 m on Mt. Kenya. *Internal examiner.*
- 10) **Nelson Kiprono Rotich – MSc (2019) - INS**. Determination of Essential Trace Metals in Soils and Spider Plants in Molo Ward, Nakuru County. *Internal examiner.*
- 11) **Cleophas Simiyu Wanjala – MSc (2019) - INS**. Estimation of Petrophysical Parameters from Nuclear Well Logs for Assessing Hydrocarbon Potential of Offshore Lamu Basin – Kenya. *Internal examiner.*
- 12) **Lynda Kanguha Wamere – MSc (2020) - INS**. Heavy Metals Pollution Using XRF Spectrometry – A case of Kilimapesa Hill Gold Mines Processing Plant, Narok County. *Internal examiner.*

**Note:** From 2019 –2024 Deanship – SoE; the Dean Chairs all the oral examinations / defenses for MScs& PhDs.

**E 2-3: Makerere University:**

- 1) **Adam Juma Abdallah Gudo – MSc (2010) – ABE**. Investigational studies on the utilization of 3-point hitch tillage implements in tropical farming systems. *External examiner.*
- 2) **Okello Collins – MSc (2010) – ABE**. Evaluating thermochemical properties and optimizing densification conditions of coffee husks under low pressure. *External examiner..*
- 3) **Joseph Kyaguranyi – MSc (2013) – ABE**. Grain amaranth suitability modeling for food security in Uganda. *External examiner..*
- 4) **Fredrick Lule – MSc (2014) – ABE**. A comparative study of two modelling approaches for predicting chemical contaminants migration in foods. *External examiner.*

**E 2-4: Jomo Kenyatta University of Agriculture and Technology (JKUAT): External examiner.**

- 1) **Michael Gareth Muthini Kituu – PhD (2013).** Application of Genetic Algorithm for Optimization of Design Parameters and Performance of a Solar Tunnel Dryer.
- 2) **Florence Gatwiri Kiburi (2014).** Moisture Sorption in Seed Maize (*Zea Mays L.*) during Hermetic Drying using Super Absorbent Hydrogel.
- 3) **Simon Ng’ang’a Njuguna – Msc (2020).** Evaluation of the Effects of Drying Methods on Quality of Macadamia Nuts Using Colour Image Analysis.

**E 2-5: Egerton University: External examiner.**

- 1) **Wanjala Wanyonyi Nasirembe – MSc (2013).** The impact of tillage on moisture retention in soils: Case of volcanic soils of Eastern Mau, Kenya.
- 2) **Orido George Onyango – MSc (2017).** Exhaust Gases Energy Recoverable from a Diesel Engine for Maize Grain Drying.

**E 2-6: Kenyatta University: External examiner.**

- 1) **Booker Onyango Osodo – PhD (2018).** Optimization of Forced Convection Dryer.
- 2) **Kilaka Mutuku – MSc (2021).** Design and Performance Evaluation of a Biomass Gasifier.
- 3) **Emmanuel Yeri Kombe (2023).** Thermodynamic Modelling and Optimization of Biomass Gasification System for Fischer-Tropsch Synthesis.

**F: CONSULTANCY**

**F1: UNIVERSITY OF NAIROBI ENTERPRISE SERVICES (UNES)**

- 1) Vehicle Efficiency Technical Feasibility Assessment and Policy Development in Kenya for GIZ (2024/2025; 2025/2026 US\$ 51, 000)
- 2) Pilot project of the Vehicle Labeling and Feebate in Kenya. UNEP- Energy Regulatory Commission (ERC) 2014/2015; 2016/2017. One year US\$ 50, 000.
- 3) Pilot project of the Global Fuel Economy Initiative (GFEI) and Modeling in Kenya. UNEP- Energy Regulatory Commission (ERC) 2013/2014. One year US\$ 40, 000.
- 4) UNEP- Energy Regulatory Commission (ERC) 2013/2014. One year US\$ 50, 000.
- 5) Development of an internship program for Graduate Engineers in Kenya. Engineers Board of Kenya (EBK). 2011/2012. Six Months - US\$ 60, 000.

**F2: ASSOCIATES**

- 1) Feasibility Study, Design, ESIA, Tender Document Preparation and Supervision of Ndiriti Aguthi Irrigation Scheme in Kieni East Division, Nyeri County. Contract No.: MOALF/SIVAP/T002/2017-2018. AGENN Associates. 2018-2022.
- 2) Undertaking the detailed design & ESIA of Umba River Irrigation Development Scheme. 2016.
- 3) Development of the Green Investment guidelines for Kenya. KenInvest and WWF. 2013. AGENN Associates. 2013-2015.
- 4) Undertaking ESIA and the detailed design of Kavunyalalo Irrigation scheme under Environ-plan and Management Consulting Engineers Ltd. For National Irrigation Board. August 2011 – 2013.
- 5) Undertaking the ESIA and detailed design of Hola Irrigation scheme under Environ-plan and Management Consulting Engineers Ltd. for National Irrigation Board. August 2012 –Dec 2013.
- 6) Development of the Rwanda Irrigation Master Plan (RIMP) in Joint Venture with ICRAF East Africa. Ministry of Agriculture and Animal Resources (MINAGRI) – Rwanda. 2009-2011. Role: Mechanization options and development expert.
- 7) Environmental and Social Impact assessment (ESIA) for proposed wind power plant. Ngong South. Soil analysis. Prunus limited. August 2011- Dec 2012. Millinium Engineers limited.
- 8) Monitoring and evaluation of water supply systems; piping, bore holes and dams for KPMG in Eastern and Rift Valley provinces, Kenya. 2012. Individual Consultant.
- 9) Environmental and Social Impact Assessment (ESIA) and Supervision of Gravel Road for World Bank funded

- projects in Lake Turkana Wind Power and Laisamis – Loyaingalani route. 2010-2011. Millinium Engineers limited.
- 10) ESIA for World Bank funded projects in Thermal (Heavy Fuel Oils -HFO) plants in Athi River and Thika. Waste recycling and Borehole analysis. Used the Equator Principles under International Financing Co-operation (IFC) and NEMA guidelines November 2010 to March, 2011. Millinium Engineers limited.
  - 11) Reviewing, evaluating and monitoring project proposals and on-going projects respectively in; Mechanization, tillage, irrigation, Environment, Water and Conservation under Commission for Higher Education (CHE); 2006 to 2010. Individual Consultant.
  - 12) Environmental Impact assessment and Exploration of water for a bore hole in Gatundu Kanyaki farm. Soil sampling and analysis. Millinium Engineers limited. 2009.
  - 13) Led a team of consultants in Southern Sudan in evaluating and assessment of machinery and equipment for Aweil Irrigation Scheme-2009; Also involved; possibilities of tractor hire service; selection, management, inventorisation and valuation of Machinery for tillage and value addition; renewable energy options. Log Associates.
  - 14) Conducted numerous training in tillage; water harvesting; conservation agriculture; post-harvest processes, energy options in: Nyanza and Eastern Provinces of Kenya 2005-2011. Exposure to selection, management, inventorisation and valuation of Machinery for tillage and value addition. Individual Consultant.



## REFEREES

**Eng. Prof. Lawrence. O. Gumbe**

Professor of Environmental and Biosystems Engineering, Kenyatta University  
P.O. Box 52428-00200

Nairobi.

**Mobile:** +254-722514754

[lgumbe@tukenya.ac.ke](mailto:lgumbe@tukenya.ac.ke) / [lgumbe@logassociates.com](mailto:lgumbe@logassociates.com)

**Eng. Prof. Elijah M. Mwangi**

Professor of Electrical and Electronic Engineering

University of Nairobi

P.O. Box 30197-00100

Nairobi.

**Mobile:** +254-725 949898

[elijah.mwangi@uonbi.ac.ke](mailto:elijah.mwangi@uonbi.ac.ke)

**Prof. John W. Kimenju**

Professor of Plant Pathology

University of Nairobi

P.O. Box 30197-00100

Nairobi.

**Mobile:** +254-722499094

[john.kimenju@uonbi.ac.ke](mailto:john.kimenju@uonbi.ac.ke)