

CURRICULUM VITAE

AYUB N. GITAU: R. Eng., PhD

**Chairman and Senior Lecturer
Department of Environmental
and Biosystems Engineering,
University of Nairobi,
P.O Box 30197,
Nairobi, Kenya.
Phone: +254 722 787029 (Mobile).
E-mail: ayub.gitau@uonbi.ac.ke ; gitauan@yahoo.co.uk**

Sex, Date of Birth: Male; October 20th, 1966.
Marital Status: Married (with three children).
Nationality: Kenyan.

Membership to Professional Organizations:

Member: Engineers Registration Board, Kenya.
Member: International Soil Tillage Research Organization (ISTRO).
Member: Kenyan Society of Agricultural Engineers (KSAE).
Member: Kenya Conservation Tillage Initiative (KCTI).
Lead Expert EA and EIA – NEMA
Quality Auditor KEBS

I am an Agricultural Engineer (Registered with Engineers Registration Board of Kenya) with 24 years of academic and practical experience in: Agricultural Mechanization Development, Renewable Energies; conservation agriculture technologies and Power and Machinery Engineering. I have held various professional 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) and senior lecturer (2008 to date). I have acted chairman; Department of Environmental and Biosystems Engineering; April – September, 2005; April, 2007 and 2010. Currently I am the chairman, Department of Environmental and Biosystems Engineering, University of Nairobi.

I have been appointed as 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 Egerton University, Department of Agricultural Engineering for undergraduate and postgraduate semester examinations from 2011 to date.

I have been reviewing peer refereed papers for numerous journals from 2005 to date including; Agricultural engineering international CIGR e-journal, Africa journal of science and technology, Taylor and Francis Energy series; Australian journal of Agricultural Engineering among others. I have been editing scientific publication with East Africa Education Publishers (EAEP) from 2003 to-date. I have extensive training, research and consultancy experience in agricultural mechanization; process engineering, renewable energies; irrigation systems, equipment design and valuation and conservation agriculture technologies for small and medium scale farmers in developing countries. I am a registered lead expert in EIA/EA with NEMA and a Quality Assurance Auditor with KEBS. I have conducted international training on post harvest processes, renewable energies – solar, biogas and wind, conservation tillage and rainwater harvesting.

A: EDUCATIONAL BACKGROUND

- 2001 – 2004: PhD Studies at the University of Nairobi; Obtained PhD degree (2005) in Agricultural Engineering (**Soil Mechanical Behaviour, Tillage Modeling and Tool Design Option**).
- 1992 - 1994: MSc. Studies at the University of Nairobi; Obtained MSc. Degree (1996) in Agricultural Engineering (**Power, Machinery and Mechanization Engineering Option**).
- 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.
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B: NATIONAL CONTRIBUTION, TECHNICAL AND MANAGEMENT ACTIVITIES

The following forms part of the key contributions and activities made nationally in line with the Engineering profession;

- Resource person- UNDP Global Environmental Fund (GEF)- Small Grants Programme (SGP) -2012 to date.
- Resource person: Continental (Africa) training on Post harvest seed processing. May-2010 and May 30-04 June 2011.
- Resource person: Introduction of camel draft power into mixed farms of Eastern province, Makueni County, Kenya. June 2010.
- Resource person: Installation, Commissioning and Calibration of a triaxial machine in the Department of Civil and Construction Engineering, University of Nairobi. April, 2010.
- Resource person in: Training of Agricultural officers (from Malawi) on conservation tillage as a tool for rainwater harvesting. 31st August, 2008.
- Resource person in: A comparative perspective of Conservation Agriculture Experiences between Australia and Kenya. 27th April, 2007. KARI Headquarters.
- Resource person in a regional workshop on; Pollution/Heavy Metal Seminar. Contributed in Conservation Tillage Technologies for Reduction of Lake Victoria Pollution. VICRes. Jinja Nile Resort, Uganda, 21st -24th March, 2007.
- Resource person in a regional workshop for development of a PhD curriculum on Dry-land Resources Management. Contributed inputs in engineering technologies and the environment. KCB –Karen, 4th -6th March, 2007.
- Resource person in: Reviewing, evaluation and monitoring project proposals and on-going projects respectively in; Mechanization, tillage, power, irrigation, environment, water and conservation under Commission for Higher Education (CHE); 2006 to date.
- Participated in an International Workshop for stake-holders in Agricultural Mechanization. Theme: Strategies and plans for running a vibrant regional mechanization process; 22nd June, 2005 at AIRC, Kabete.
- Resource person in a conference in: Re-invigorating the University mandate in a globalizing environment: Challenges, obstacles and way forward. Kenya DAAD Scholars Association (KDSA). Kenyatta University; 26th – 27th May, 2005.
- Resource person in a 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, equipments and other land preparation machinery for conservation tillage. 17th -30th April, 2005.
- Resource person in a National Stakeholders’ Consultative Workshop: Regional Universities Forum for Capacity Building in Agriculture (FORUM). Contributed in the engineering inputs and applications, 6th – 8th February, 2005.
- Editing scientific publication with East Africa Education Publishers (EAEP). 2003 to-date.
- Setting and moderation of Kenya National Examination Council (KNEC) technical papers at Craft and Diploma levels in Mathematics and Engineering Science to mechanical (Plant, Automotive and Metallurgy options), Agricultural (Power and Machinery option) and Electronic Engineering students; 2001-2003.

C: UNIVERSITY CONTRIBUTIONS

C1: Teaching: University Performance Contract Rating: 2005-2013- Exceeds Expectation

18 years teaching experience at University level: -

- At the University of Nairobi: Teaching; examining and supervising undergraduate and postgraduate students since 1996 in the areas of: Mechanization Development, Energy, Power and Machinery Engineering, Structures Engineering, Process and Food Engineering and Science and Technology in Development.
- At Jomo Kenyatta University of Agriculture and Technology (JKUAT): Teaching and examining (part-time) undergraduate students for 6 years (from 1995) in: Mechanization, Power and Machinery Engineering, Structures Engineering and Post Harvest Technology.
- At Kenya Methodist University (KEMU): Teaching; examining and supervising undergraduate courses for 2 years in: Mechanization, Power and Machinery Engineering, Structures Engineering, Post Harvest Technology and Pre-University Mathematics.

C2: Collaborations:

- Department of Environmental and Biosystems Engineering -University of Nairobi / Department of Agri-Food Science and Technology - University Of Bologna (EDULINK II) on Energy-agro food synergies in Africa: New Educational Models for Universities. 2012 to date.
- MoU Department of Environmental and Biosystems Engineering -University of Nairobi / EurA Themie Innovation GmbH. 2012 to date.
- MoU NIB and UoN: Research input and development in Bura and Hora Irrigation Schemes. 2011
- MoU MINAGRI – Rwanda and UoN: Training of technical staff on power and machinery. 2011
- MoU SUSTAINET EA and UoN: Renewable energies and Conservation Agriculture Technologies. 2010.
- Camel draft power project. Under EU by KARI (2009).
- 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).
- 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).

C3: Committee Membership/ Responsibilities:

- Chairman, Department of Environmental and Biosystems Engineering, University of Nairobi - 2011 to date.
- Member, Board of Governors- Komo mixed Secondary School 2010 to date (two 3 year terms).
- Chair. CAE (College of Architecture and Engineering). College Quality Assurance Officer; May, 2009 to 2011.
- Chair and member. CAE. College disposal committee. 2009 to date.
- Coordinator. CAE. College Environmental Audit. 2008 to date.
- Chair: CAE. College safety and health committee; 2007 to date.
- Chair and Member: Faculty Postgraduate Studies Committee (FPSC). School of Engineering and Faculty of Agriculture; 2007 to 2011.
- Departmental Coordinator: Mechanization, Power and Machinery Engineering Section. 2005 to date.
- Coordinator: Departmental examination committee; 2002 to 2009.
- Other Departmental memberships include; Development and income generation; library and bookshop, short-listing and 1st year advisor; 2002 to date.

D: RESEARCH ACTIVITIES

D1: Supervision and Research Grants:

POST-GRADUATE SUPERVISION AND EXAMINATIONS (MSc and PhD)

Over 20 MSc and 4 PhD candidates – Supervision and Examination for University of Nairobi, Makerere University, Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Egerton University .

RESEARCH GRANTS

Fundings sourced from VICRES, National Council for Science and Technology (NCST), United Nations Educational, Scientific and Cultural Organization (UNESCO) and Deans Committee funds: All sources geared towards Agricultural mechanization, post harvest technologies and water harvesting. 2005 to date.

i.e.

- Water Harvesting for Sustainable Food and Nutritional Security (WHENFS) in Semi-Arid Kitui West District. Use of roof top and pan water harvesting for green house crop production through drip irrigation. National Council for Science and Technology (NCST) funded. 2011 and ongoing.
- Water Harvesting For Sustainable Environment, Food Security and Community Development in Kenya – Mbooni, UNESCO funded. 2012-2013.
- 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.
- Development and design of conservation tillage tools. Deans Committee UoN funded. 2007 – 2011. Completed.

D2: Consultancy:

- Undertaking the detailed design of Kavunyalalo Irrigation scheme in joint venture with Environ-plan and Management Consulting Engineers Ltd. National Irrigation Board. August 2011 – 2013.
- Undertaking the detailed design of Hola Irrigation scheme in joint venture with Agricom Engineering Ltd. National Irrigation Board. August 2011 –Dec 2012.
- 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.
- Environmental Impact assessment for proposed wind power plant. Ngong South. Soil analysis. Prunus limited. August 2011- Dec 2012.
- Monitoring and evaluation of water supply systems; piping, bore holes and dams for KPMG in Eastern and rift valley provinces, Kenya. 2012
- Environmental and Social Impact Assessment (ESIA) for World Bank funded projects in Lake Turkana Wind Power and Laisamis – Loyaingalani route. February to May, 2011.
- ESIA for World Bank funded projects in Thermal plants. Waste recycling and Borehole analysis. Used the Equator Principles under International Financing Co-operation (IFC) and NEMA guidelines November 2010 to March, 2011.
- Reviewing, evaluation 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.
- Environmental Impact assessment and Exploration of water for a bore hole in Gatundu Kanyaki farm. Soil sampling and analysis. Millinium Engineers limited. 2009.
- 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.
- Recently (2007-2008) developed a cane haulage model and fleet structure for Mumias Sugar company, Kenya.
- In a team that conducted National survey on banana and tea production in Kenya, 2010
- Involved in the design of the Chuka-Kirinyaga Irrigation system-2007 and EIA.
- Conducted numerous training in tillage; water harvesting; conservation agriculture; post harvest processes, energy options in: Africa and Nyanza and Eastern Provinces Kenya 2005-2011. Wide

experience in selection, management, inventorisation and valuation of Machinery for tillage and value addition.

E: RECENT PUBLICATIONS

I have over 40 scientific research publications in refereed Journals, Workshop, Seminars and Conference Proceedings and Unpublished study reports.

E1: In Peer Reviewed and Refereed Journals:

- **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
- 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.
- 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
- 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.
- 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.
- 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.
- Gichuhi, N.W., **Gitau A. N.**; Mutua J.M.; Kaberere K.K. and Mangoli 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.
- **Gitau, A.N.**, Kasisira L. and Mganilwa, Z.M. (2010). Mechanization status in the lake Victoria of East Africa. AJAE. 1(5):160-164 (2010). ISSN-1836-9448
- 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.
- 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.
- **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.
- 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.
- 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.
- **Gitau, A.N.** and Gumbe, L.O. (2007). Transition from brittle failure to ductile flow in an irrigatable sandy soil. Discovery and Innovation journal. Vol. 19 No. 2 Pg. 140-146. 1015 – 079X.
- 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.
- **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.
- **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).

E2: Chapters in a Book:

- **MIAGRI Republic of Rwanda, 2010.** Rwanda irrigation Masterplan (RIMP). 240 p. ISBN: 978-92-9059-278-5.
- **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 35-62; 229. ISBN 9966-9705-9-2.
- **Mechanical Behaviour of Hardsetting Soils, 2010:** *The critical state soil mechanics approach to soil tillage.* LAMBAERT publishers. ISBN: 978-3-8433-7027-1

E3: Technical Manuals:

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

ISBN: 978-9966-1533-

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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

E4: In Peer Reviewed Proceedings:

- **Gitau, A. N. and Gumbe, L. O. (2005).** Mechanical behaviour of hard setting soils of semi-arid Kenya. In: Proceedings of the 3rd, World Congress on Conservation Agriculture, Nairobi Kenya. Linking production, livelihoods and conservation. 3rd -7th Oct., 2005. CD-ROM. Pp 62-70.
- **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. 17th – 19th Nov., 2004. Ethiopia, Adidas Ababa. CD-ROM. Pp 199-215.
- **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. 11th - 14th Oct. 2004. CD-ROM. Vol. 1. Paper No. 10-114A. I-124. ISBN 7-80167-707-2.
- **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 15th international soil tillage research org. (ISTRO). July 2-7, 2000. Fort Worth, Texas, USA. pp 106-115.

F: TRAINING / INTERNATIONAL WORKSHOPS:

- UNDP GEF Small Grants Programme. Evaluation training workshop - Gilgil – April 2012 and Monitoring Nyeri Nov. 2012.
 - ISO refresher training on Continued improvement Nakuru- Feb 2012
 - Training in Q-pulse for ISO data analysis. 2011
 - Training in Rapid Results Initiatives (RRI) and Performance Contracting Appraisal (PCA). Through ministry of education staff. 2nd November, 2008.
 - Training in pedagogy: From Kikuyu campus (UoN) to CAE staff. 15th -17th October, 2008.
 - International R&D workshop / training in agricultural engineering technologies and mechanization. Held in conjunction with the agricultural engineering institute at the ministry of agriculture and rural development. 18th – 31st October, 2006. Volcani Campus, Bet Dagan, Israel.
 - Proposal write-up for funding. Kenya Agricultural Productivity Project (KAPP) competitive grant system. Kenya Institute of Administration, Nairobi, Kenya. 10th – 19th April, 2006.
 - Introduction to biotechnology and bio-safety policy analysis. October 24th – 28th, 2005. ACTS. World agro-forestry centre, Kenya.
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REFEREES

Prof. B. N. K. Njoroge

Principal – College of Architecture and Engineering UoN and
Associate Professor of Civil and Construction Engineering
P.O. Box 30197-00100
Nairobi

Prof. L. O. Gumbe

Associate Professor of Environmental and Biosystems Engineering
P.O. Box 30197-00100
Nairobi

Prof. S. K. Mwea

Chairman - Department of Civil and Construction Engineering
Associate Professor of Civil and Construction Engineering
P.O. Box 30197-00100
Nairobi.
