


STAFF PROFILE

Name	Dr. Phoebe Anyango Sikuku
Qualification	PhD Botany (Plant physiology and Biochemistry)
Picture	
Department	Botany
Email:	sphoebe@maseno.ac.ke , phoebenyangi@yahoo.com
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Brief Bio	<p>Dr. Phoebe Anyango Sikuku holds a PhD degree in Plant Physiology and Biochemistry and currently employed by Maseno University- Kenya as a lecturer in the department of Botany. She has been involved in postgraduate students supervision and has supervised a number of Msc and PhD students. She is an examination officer for Botany department, Maseno University where she coordinates examination processing. She has been instrumental in mentoring and advising students on career choices. She has been awarded many fellowships among them African Women in Agricultural Research and development (AWARD) and is a member of various professional associations. She is actively involved in mentoring young researchers especially women researchers and has been participating actively in role modelling events. She is an accomplished researcher who has published many papers in International peer reviewed Journals mainly on environmental stresses. In Addition, she has attended a number of short courses and also presented in various conferences, workshops and symposiums. She has won a number of research grants and has been actively involved on farmers training on suitable and sustainable agronomic practices in rice cultivation which has helped improve their livelihood.</p> <p>She is passionate on increasing food productivity by identifying technologies that enhance tolerance of crop plants to various environmental stresses. She has been passionate on increasing rice productivity and food security in Kenya</p>

	<p>and has been engaged in research geared towards expansion and increased rice production by developing and up scaling affordable and easy to use agronomic packages for rural population relying heavily on rainfall agriculture. She has also been involved in intercropping various crops with agroforestry plants to find out the best technologies that can be rolled out to the farmers that can give better yields without using inorganic fertilizers. Currently she is a principal investigator in a project whose aim is to use African Indigenous Vegetables in Mitigation of Hypertension and Nutritional Security in Western Kenya and a Co- investigator in a project whose aim is to improve production and quality of Bixa Orellana (ANNATO) by use of organic fertilizers for commercialization in coastal Kenya.</p>
<p>Current Research: We also need past research activities</p>	<ol style="list-style-type: none"> <li>1. Use of African Indigenous Vegetables in Mitigation of Hypertension and Nutritional Security in Western Kenya. April 2020- April 2023, 150000USD by National Research Fund- Kenya- Principal Investigator. The main objective of the project is to evaluate factors influencing amino acids composition of AIVs, and to identify hypertensive principles and develop selected AIVs for management of hypertension in western Kenya by identifying the AIVs grown and establishing potential values and technologies used in their production in western Kenya, determining influence of agronomic practices (fertilization, age at harvest and geographical area of production) on the production of amino acids and GABA levels in selected AIVs in western Kenya, developing methods of enhancing GABA levels in glutamic acid rich AIVs from western Kenya, building capacity of the smallholder farmers and other stakeholders on sustainable production of anti-hypertensive principles rich AIVs, popularizing AIVs with antihypertensive principles and train postgraduate students using the project. <li>2. Improving Production and Quality of Bixa Orellana (ANNATO) by use of Organic Fertilizers for Commercialization in Coastal Kenya, April 2020- April 2023, 170000USD by National Research Fund- Kenya- Co-Investigator. The broad objective of the research is to improve production and quality of bixa by use of organic fertilizers in coastal Kenya by establishing the current production trends of bixa in Kwale County of coastal Kenya, improving the yields of bixa in coastal Kenya through the use of organic fertilizers, improving the quality of bixa in coastal Kenya through proper pre-and post-harvest handling practices and improving marketing strategies for increased incomes of smallholder bixa farmers in coastal Kenya.

	<p>3. Enhancement of climate smart vegetable production and commercialization in Lake Victoria Region of Kenya. May 2017- May 2020, 156790USD by National Research Fund- Kenya- Co-Investigator. The general objective of the project was to enhance climate smart vegetable production and commercialization in the Lake Victoria Region by promoting climate smart production technologies for improved vegetable productivity, building capacity of the smallholder farmers and other stakeholders on sustainable quality vegetable seed supply in Lake Victoria Region, identifying and address harvesting, processing, storage and distribution constraints in the value chain and promoting relevant marketing strategies for increased income.</p> <p>4. Mitigation of Climate change through sustainable integration of Maize based Agroforestry Systems for food security and poverty reduction in western Kenya. May 2017- May 2020, 100000USD by National Research Fund- Kenya- Co-Investigator. The general objective was to improve the resilience of farming systems and livelihood strategies of small holder farmers to climate change variability through increased use of agroforestry systems for intensification, diversification and buffering of farming systems by evaluating the effect of different agro forestry trees on soil carbon and nitrogen dynamics, Evaluating the effect of agro forestry system in soil microorganisms, Evaluating the effect of different agro forestry trees on maize and banana physiology and greenhouse gas emissions, Determining the effect of maize based agro forestry systems on crop and livestock productivity and determining seasonal variations of pest and diseases incidence in maize based agroforestry system.</p> <p>5. Development and validation of demand driven rice varieties for enhanced yield under small scale farmer's conditions under major rice producing regions of Coast, Central and Western. May 2014- 16: 67000 USD by EAAPP - Co- investigator. The general objective of the research was to improve rice productivity hence food security among the rice growing small holder farmers who are mainly women in Western Kenya by establishing the best rates of inorganic fertilizer for each variety being grown in western Kenya, Identify the drought tolerant and low nitrogen fertilizer adaptable rice varieties through screening, identify the genes/QTLs associated with drought and low nitrogen tolerance to be used as molecular markers for further breeding for drought and low nitrogen tolerance</p>
Publications:	REFEREED JOURNALS

1. Korir VJ, Sikuku PA and Musyimi DM. 2021. Phytochemical Analysis of Pyrethrum Plant Extract and its Anti-Aphid Effect On African Nightshades (*Solanum Scabrum* Mill). **East African Scholars Journal of Biotechnology and Genetics. 3(1), 21-29**
2. Obila, S.M, Musyimi, D.M. and **Sikuku, P.A.** 2020: Phytochemical and fungicidal activity of selected plant extracts against *Phaeoisariopsis griseola* of common bean. **International Journal of Microbiology and Mycology 11(5)1-11.**
3. Wamalwa, S.D, **Sikuku P. A.**, Netondo G.W and Buyela D.K. 2019. Influence of NPK blended fertilizer application on Chlorophyll content and Tissue mineral contents of two Finger millet varieties grown in Acid soils of Kakamega, western Kenya. **International Journal of Plant and Soil Science 27(14): 1-9.**
4. Sikuku, P.A., Musyimi and Amusolo, M. 2018. Effects of seed depth on germination, growth and chlorophyll content of *Senna spectabilis*, **Discovery Science 14:84-92.**
5. Wamalwa S.D, Netondo G and **Sikuku P.** 2017. Effect of NPK blended fertilizer rates on growth and yield attributes of finger millet varieties grown in acidic soils of Western Kenya. **Archives of current research International 11(4): 1-11**
6. Musyimi D.M, **Sikuku, P.A.**, **Opande G.** and Korir V.J. 2017. Allelopathic effects of Eucalyptus camaldulensis and Eucalyptus globules leaf extracts mixture on germination and growth of Sorghum. **IJRDO-Journal of Biological Science 3(7):58-78**
7. Musyimi, D.M., Opande, G.T., Chesire J., **Sikuku, P.A.** and Buyela D.K. 2017. Antimicrobial potential and screening of phytochemical compounds of Lantana camara Linn. **IJRDO-Journal of Biological Science 3(6):18-35**
8. Sikuku, P.A., Kimani, J.M., Kamau, J.W. and Njinju, S. 2016. Influence of Nitrogen Supply on Photosynthesis, Chlorophyll content and Yield of Improved Rice Varieties under upland Conditions in Western Kenya. **American Journal of Experimental Agriculture 13(2):1-14**
9. Musyimi, D.M., Okello, L.O., Okello, S.V., and **Sikuku, P.A.** 2015. Allelopathic potential of Mexican sunflower [*tithonia diversifolia* (hems) a. Gray] on germination and growth of Cowpea seedlings (*vigna sinensis* l.). **Scientia Agriculturae 12(3):149-155**
10. Mmayi M.P., Musyimi D.M., Netondo G.W. and **Sikuku, P.A.** 2015. Chlorophyll fluorescence parameters and photosynthetic pigments of four Soy bean (*Glycine max*) varieties under aluminium chloride stress. **Scientia Agriculturae 10(2):84-94.**
11. Sikuku, P.A., Kimani, J.M., Kamau, J.W. and Njinju, S. 2015. Evaluation of Different Improved Upland Rice Varieties for low Soil Nitrogen Adaptability. **International Journal of Plant and Soil Sciences (IJPS) 5(1):40-49.**

	<p>12. Musyimi, D.M., Okello, S.V., Sikuku, P.A. and Mutevu, J.M. 2014. Effects of fresh leaf materials of <i>Sesbania sesban</i> (L.) Merrill on the growth and photosynthetic pigments of nightshade (<i>Solanum nigrum</i> L. var. popolo). International Journal of Agronomy and Agricultural Research (IJAAR) 4 (5): 10 - 21.</p> <p>13. Sikuku, P.A., Musyimi, D.M., Kariuki S. and Okello, S.V. 2013. Responses of slenderleaf rattlebox (<i>Crotalaria ochroleuca</i>) to water deficit. Journal of Biodiversity and Environmental Sciences (JBES) 3 (12): 245-252.</p> <p>14. Sikuku P.A., Onyango J.C. and Netondo G.W. 2012. Yield component and gas exchange responses of NERICA rice varieties (<i>Oryza sativa</i> L.) to vegetative and reproductive stage water deficit. Global Journal of Science Frontier Research 12 (3): 51 - 61.</p> <p>15. Sikuku P.A., Onyango J.C. and Netondo G.W. 2012. Physiological and biochemical responses of Five NERICA rice varieties (<i>Oryza sativa</i> L.) to water deficit at vegetative and reproductive stage. Agriculture and Biology Journal of North America 3(3): 93 – 104</p> <p>16. Musyimi D.M., Kahihu S.W, Buyela D.K. and Sikuku P.A. 2012. Allelopathic effects of Mexican sunflower (<i>Tithonia diversifolia</i> (Hemsl) A.Gray] on germination and growth of Spider plant (<i>Cleome gynandra</i> L.). Journal of Biodiversity and Environmental Sciences 2(8):26-35.</p> <p>17. Sikuku P.A., Netondo G.W., Onyango J.C. and Musyimi D.M., 2010. Effects of Water Deficit on Physiology and Morphology of three varieties of NERICA rainfed rice (<i>Oryza sativa</i> L.). Journal of Agricultural and Biological Science 5(1): 23-28.</p> <p>18. Sikuku P.A., Netondo G.W., Onyango J.C. and Musyimi D.M., 2010. Chlorophyll fluorescence, protein and chlorophyll content of three NERICA rainfed rice varieties under varying irrigation regime. Journal of Agricultural and Biological Science 5(2):19-25.</p> <p>19. Sikuku P.A., Netondo G.W., Onyango J.C. and Musyimi D.M. (2010). Effects Of water deficit on days to maturity and yield of three NERICA rainfed rice varieties. Journal of Agricultural and Biological Science 5(3):1-9.</p> <p>BOOK CHAPTER</p> <p>1. Sikuku P.A, Kimani, J.M, Kamau, J.W. and Njinju, S. (2019). Response of Improved Rainfed Rice Varieties to low Soil Nitrogen. In: Ferreira, A.O. New Perspectives in International Plant and Soil Research. Book Publisher International, United Kingdom.</p>
Attachment	<p>EDUCATION</p> <p>BED (SCIENCE) Msc (Plant physiology and Biochemistry) PhD (Plant physiology and Biochemistry), Maseno University.</p>

SHORT COURSES ATTENDED

-25th – 26th February 2021: Course on Quality Management System (QMS) International Organization for standardization (ISO)/International Electro technical commission (IEC), Kisumu, Kenya.

-10th-28th August 2015: International course on Rice: Research to production. International Rice Research Institute (IRRI), Los Banos, Laguna, Phillippines.

-3rd-9th May 2015: African Women in Agricultural Research and Development (AWARD) Women's Leadership and Management Course, Kampala Uganda.

-15th-21st June 2014: African Women in Agricultural Research and Development (AWARD) Science Skills Course, Nairobi Kenya.

-3rd-21st June 2013: International course on Monitoring, evaluation and impact assessment of food and nutrition security programmes. Centre for Development Innovation (CDI), Wageningen- Netherlands.

-3rd July - 4th Aug- 2012: Certificate course on 'Development of Core Agricultural Researchers for Rice Promotion in Sub-Saharan Africa', ICCEA, Nagoya University- Japan.

-22nd April 2007 to 28th August 2007: Lakeline Computer College- Maseno.

Qualification: Certificate in Computer studies, Distinction.

TEACHING EXPERIENCE

13 years of teaching Plant physiology, Plant biochemistry, Physiological plant ecology and Phytochemistry.

MSC. THESIS SUPERVISION

1. Kanigi Mercyline (MSC/SC/00024/2019): Phytochemical composition, Antioxidants and antimicrobial activity of crude extracts of selected medicinal plants (Ongoing)
2. Millicent Othieno (MSC/SC/00024/2019): Effects of Maize- Soya beans intercropping patterns on growth, pod formation and yield of Soya bean in Kaimosi, Vihiga County. (Ongoing).
3. Rose mary Opwondi (MSC/SC/00107/2018) Determination of Maize Rhizosphere Microflora and their Antagonistic potential against *Ustilago mydis* (Ongoing)
4. Buyela Daniel (PhD/SC/00027/2017): (PhD/SC/00027/2017) Microbial diversity, nutrient dynamics and greenhouse gas emissions in maize (*Zea mays*)-banana based agroforestry system in Kisii County Kenya (Ongoing).
5. Sunguti Allan (MSC/SC/00001/2016): Ethnobotanical study, Phytochemical Analysis and Antimicrobial activity of selected medicinal plants in Hamisi sub county, Kenya (Ongoing).
6. Dennis Simiyu Wamalwa (PhD/SC/00001/2018): Effects of intercropping maize and banana with selected agroforestry trees on soil chemical

dynamics, growth, physiology and yield in Vihiga County, Kenya.

7. Dircacious Wafula (MSC/SC/00009/2017): Evaluation of Growth, Ecophysiology and Yield of Maize and Banana Plants in an Intercropping System in Kisii County, Kenya.
8. Ombati George (MSC/SC/00093/016): Effects of inoculating Soya beans with *Bradyrhizobium liaoningense* on yield, chlorophyll concentration and nodulation.
9. Meso Simon (MSC/SC/00127/016): Efficacy of selected plant extracts against angular leaf spot (*Pseudocercospora griseola*) of common bean (*Phaseolus vulgaris* L).
10. Anina Dzovu (MSC/SC/00034/016): Phytochemical composition, Anti-larvicidal activity of *Cocos nucifera* extracts on *Busseola fusca* and its effects on Maize damage and yield.
11. Korir Vicky (MSC/SC/00008/016): Pesticidal Effects of Pyrethrum (*Chrysanthemum cinerariaefolium* Vis.) extracts against Aphids of African Nightshade (*Solanum villosum* Mill.).
12. Dennis Simiyu Wamalwa (MSC/SC0145/14): Effects of NPK blended fertilizer application on soil physico-chemical properties, growth, physiology and yield of two finger millet (*eleusine coracana l. gaertn.*) varieties grown in acidic soils of Kakamega western Kenya.

APPOINTMENTS AND COMMITTEES SERVED

1. Year 2021 – Board member (Secretary), International Training Center for Environmental Research –Kenya (ITCER-Kenya)
2. Year 2019 – to date: Chairperson, departmental postgraduate committee, Botany department, Maseno University.
3. Year 2017- Served in the Committee developing a new Bsc. Biology with IT course, School of Physical and Biological Sciences, Maseno University.
4. Year 2016- Deputy CEO Nyando Development Centre for Environmental Conservation (NYADEC)
5. Year 2016 – Departmental Information Technology Champion, Botany department, Maseno University.
6. Year 2016 – Vice Chairperson of departmental ISO Committee, Botany department, Maseno University.
7. Year 2016 – Member of departmental ISO Committee, Botany department, Maseno University.
8. Year 2015 - to date: Chairperson, Departmental Welfare Committee, Botany department, Maseno University
9. Year 2015 - to date: Committee Member, School Welfare committee, School of Biological and Physical Sciences, Maseno University
10. Year 2015 - Member of Committee for development of specialized

common IT courses for the School of Physical and Biological Sciences.

11. Year 2014 - to date: Chairlady, Department Course Restructuring and Brochure Committee, Botany department, Maseno University.
12. Year 2014 - to date: Examination and Time table Co-ordinator, Botany department, Maseno University.
13. Year 2014 – 2015: Customer Complaint handling officer, Botany department, Maseno University.
14. Year 2013 - to date: Member of departmental postgraduate committee in the department of Botany, Maseno University.
15. Year 2011 - to date: Member of course restructuring committee in the department of Botany, Maseno University.
16. Year 2011- Served in the committee for curriculum development for a bridging certificate course in biology, for Maseno University.
17. Year 2010 – 2011: Served in the committee for course restructuring in the department of Botany and horticulture, Maseno University.

CONFERENCES, WORKSHOPS AND SYMPOSIUMS ATTENDED

- 2018 – Quality Assurance and University Examination Processes Workshop, held at Maseno University, Maseno- Kenya on 9th November 2018.
- 2018- EXCEED-SWINDON Workshop on “Holistic Approach to water resources management in Africa” held in University of Yaounde1, Cameroon from 3rd – 8th June 2018.
- 2018- African Women in Biosciences Workshop on Biosciences Biosafety Communication held at Royal Orchid Hotel on 25th-26th January 2018.
- 2017- Women in Biosciences Forum on “Forming a network that can address public concern on application of Biosciences in Agriculture” held at Royal Orchid Hotel on 20th April 2017.
- 2016- SATREPS International Symposium on “Tailor made rice breeding and cultivation technology development for Sub-Saharan Africa” held at KALRO- headquarters, Nairobi-Kenya on 6th December 2016.
- 2016- Science Forum 2016 (SF-16) on “Agricultural research for rural prosperity: Rethinking the pathways” held at the United Nations Conference Center in Addis Ababa, Ethiopia from 12th -14th April 2016.
- 2016- Pre-proposal Workshop on Ecosystem services, conservation and Land use changes in Mt. Elgon, National Park, held at LBDA, Kisumu-Kenya from 16th-17th March 2016.
- 2015- Global Summit on Plant Science held in San Antonio, Texas, USA from 21st -23rd September 2015.

- 2014 – Regional Rice Centre of Excellence Scientific Conference, held at Nashera hotel, Morogoro, Tanzania from 15th- 18th July.
- 2014- AWARD Mentoring Orientation Workshop, held at Eka Hotel, Nairobi, Kenya from 17th-21st 2014.
- 2013- Research Grants Writing Workshop, held at Maseno University, Maseno- Kenya from 26th-28th June 2013.
- 2013- Environmental and development conference on “Linking environmental Research to Kenya’s development Agenda and Vision 2030” held at Red Court Hotel, Nairobi- Kenya from 9th-12th April, 2013.
- 2013- Eastern Africa Agricultural Productivity Project (EAAPP) rice PIs and Co-PIs review and planning workshop held at Tom Mboya Hotel, Kisumu-Kenya from 6th-7th May 2013.
- 2012- Rice researcher’s forum symposium held at Panafric Hotel Nairobi on 29th February 2012.
- 2011- Rice researcher’s forum symposium launch held at AICAD JKUAT on 27th October 2011.
- 2009- Workshop on Rice Knowledge Bank held at Sunset Hotel, Kisumu-Kenya from 9th- 11th September 2009.
- 2004- National Environmental Management Authority (NEMA) Conference, Maseno-Kenya University.

FELLOWSHIPS AWARDED

- 2016: Independent Science and Partnership Council (ISPC) early career scientist award to attend science forum (SF-16) at the United Nations Conference Center in Addis Ababa, Ethiopia.
- 2014-2016: African Women in Agricultural Research and Development (AWARD)
- 2013: Netherlands Fellowships Programme (NFP) to attend an international course on Monitoring, evaluation and impact assessment of food and nutrition security Programmes at Centre for Development Innovation (CDI), Wageningen- Netherlands.
- 2012 : Japan International Cooperation Agency (JICA) fellowship to attend a course on Development of core agricultural researchers for rice promotion in Sub- Saharan Africa at ICCEA Nagoya University, Japan.

	<p><u>RESEARCH INTERESTS</u></p> <ul style="list-style-type: none">• Plant stress physiology-water stress, salinity stress and nutrient stress.• Climate change mitigation.• Environmental conservation and Poverty reduction. <p><u>PROFESSIONAL ORGANIZATION AFFILIATIONS</u></p> <ol style="list-style-type: none">1. American Society of Agronomy2. Crop Science Society of America3. Organization for Women in Science for the Developing World (OWSD)4. Kenya Rice Researchers Forum5. African Women in Agricultural Research and Development-Kenya Chapter (KeAWARD)
Digital Footprint	