
Name - BEATRICE ANYANGO PhD
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PERSONAL PROFILE

I am a trained science teacher and a holder PhD in Soil Microbiology, Microbial Ecology of root-nodule bacteria and other soil microorganisms. I have been involved in biological nitrogen fixation (BNF) research for the last 25 years working with both food and tree legumes in agriculture and agroforestry. Specifically, I have done genetic characterization of root nodule bacteria that nodulate common beans, *Phaseolus vulgaris* from various Kenyan soil types. Together with collaborators from Kenya Forestry Research Institute, we developed programs for proposal writing training courses for researchers in agriculture and forestry. Besides this, I have done extensive tailor made training courses on biotechnology to create a critical mass in the country. I have undergone extensive training in bio-safety and environmental risk assessment of genetically modified organisms. I'm part of the regional bio-safety experts and I coordinated bio-safety activities in the School of Biological Sciences, University of Nairobi. Recently I had an opportunity of participating in a leaders training program to become a Champion for Change in Food Security in Africa. As a person, my vision is to be a change agent while I endeavor to remain relevant to the issues affecting Kenya and other African countries.

EDUCATION

- Ph.D.** 1989 - 1992 - Soil Microbiology - Wye College, University of London, UK
- MSc.** 1980 - 1982 - Botany - Microbiology - University of Nairobi, Kenya
- BSc.** 1977 -1980 - Botany and Zoology - University of Nairobi, Kenya
- S1.** 1974-1977 - Science Teacher Training at Kenya Science Teachers College

RESENT COURSES ATTENDED

- Corporate Governance and Leadership Seminar, 21st-23rd August 2013, Kenya Institute of Administration, Nairobi
- Leadership Training on Champions for Change in Food Security by Africa Lead and Feed the Future, 3rd -8th April 2011, Nairobi, Kenya
- 7th International Post-graduate course in Biotechnology in Agriculture in a World of Global Environmental Changes, Hebrew University of Jerusalem, Rehovot Campus, Israel, Feb 17th to March 18th, 2009.
- Curriculum Development Workshop for Short Courses in Proteomics, University of Hertfordshire, UK, June 2004
- Curriculum Development Workshop for Short Courses in Molecular Biology and Bioinformatics, University of Hertfordshire, UK, June 2005
- SIDA-SAREC Grant to attend a training course on Genetically Modified Plants Practice, 2nd- 20th October 2000, SvalofWeibull, Sweden.

AWARDS AND FELLOWSHIPS

- 2011 -Champions for Change Leadership Training on Food Security, April 4th - 8th 2011.
- 1999 - IFS travel grant to attend the regional workshop on proposal writing, Kadoma, Zimbabwe.
- 1998 - SIDA-SAREC Travel grant to Stockholm, Sweden.
- 1996 - British Council fellowship to the University of Sussex, Brighton, UK.
- 1995 - UNESCO Fellowship to Wye College, University of London.
- 1995 - IFS travel grant to the Forestry Congress, Tempere, Finland.

- 1994 - University of Hohenheim, Stuttgart, Germany - Scholar.
- 1994 - CTA travel grant to the African Association of Biological Nitrogen Fixation (AABNF) Congress, Harare, Zimbabwe
- Research Organizations (IUFRO) Congress, Tampere Finland
- 1991 - UNESCO travel grant to the GIAM IX, Valleta, Malta.
- 1989-1992 - Association of Commonwealth Universities (ACU) Scholar
Wye College, University of London.

MEMBERSHIP OF PROFESSIONAL SOCIETIES

- Member, African Association of Biological Nitrogen Fixation (AABNF)
- Member, African Women in Science and Engineering (AWSE)
- Member, Kenya German Academic Exchange Service (DAAD) Students Association
- Kenya Society of Microbiology (KSM)
- Member, Network of African Champions for Change in Food Security
- Kenya (DAAD) German Academic Exchange Service Scholars Association

EMPLOYMENT RECORD

Jaramogi Oginga Odinga University of Science and Technology

Associate Professor, School of Biological and Physical Sciences (July 2010 to date)

University of Nairobi

Senior Lecturer, Dept. of Botany (1997 - 2010)

Lecturer, Dept. of Botany, (1992 - 1997)

Asst. Lecturer, Dept. of Botany (1989 - 1992)

Tutorial Fellow, Dept. of Botany (1986 - 1989)

COURSES TAUGHT

I have taught both undergraduate and postgraduate courses for 25 years, supervised 4 PhD and 9 MSc. students. I have examined a total of 22 theses both from local and international universities.

POSTGRADUATE SUPERVISION

Students

- PhD - **Pascaline Jeruto.** Characterization, Chemical and Microbial Analysis of *Sennadidymobotria* registered, 2011 to 2018. **Graduated in December, 2018**
- PhD - **Benson O. Onyango.** Genetic Diversity and Symbiotic Efficiency of Bacteria which nodulate Soybeans (*Glycine max*) and Bambara ground nut (*Vigna subterranea*).
- PhD- **John Millan Otuoma.** Biomass Production and Carbon Sequestration under different forest recovery pathways in Kakamega Forest.
- Ph.D. - **Mrs. Miriam Jumba.** Studies on some Entomopathogenic/free living nematodes and their bacterial symbionts isolated from soil in South Africa, 2006
- Ph.D. - **Mr. Nelson O. Amugune.** Transformation and regeneration of common bean (*Phaseolus vulgaris* L.) by tissue culture, 2001.
- MSc. - **Salome W. Kiarie-Thuo.** Effects of disturbance on the abundance and diversity of *Arbuscular Mycorrhizal Fungi* in Masai- Mau Forest, 2011.
- MSc. - **Antony D. Njoroge.** Screening of *Phyllanthus* spp for anti-microbial properties, 2011.
- MSc. - **Bancy N. Muruga.** The diversity of *Extremophilic Bacteria* in Lake Magadi, Kenya, 2011.
- MSc. - **Miriam Wepukhulu.** Abundance of *Bacillus subtilis* and root-knot nematodes under different soil fertility management systems, 2008.
- MSc. - **Edward O. Okonjo.** Studies on the proteins produced in the hemolymph of the snail vector *Biomphalaria pfeifferi*, infected by *Schistosoma mansoni*, 2009
- MSc. - **Opondo Dorothy Atieno.** Comparison of proteins of parasite stages of *Schistosoma mansoni* and those of the tissues of the snail vector *Biomphalaria pfeifferi*, 2009.
- MSc. - **Cecilia K. Nzau.** Risk Assessment study on the Impact of *Bacillus*

thuringiensis(B.t.) toxins on nodulation and nitrogen fixation of common beans (*Phaseolus vulgaris*), 2007.

MSc. - **Mr. Elija K. Lelmen.** Effects of *Bacillus thuringiensis* on Arbuscular Mycorrhizal fungi in Sorghum, JKUAT, 2004.

MSc. - **Mr. John K. Mugo.** Nitrogen fixation in *Acacia drepanolobium*, 1998.

POSTGRADUATE STUDENTS EXAMINED

1. **Ms. Florence Awino Ouma.** MSc. Thesis entitled “Prevalence, Source Tracking and Antimicrobial Susceptibility of Selected Pathogenic bacteria in Street vended foods sold in Kisumu, City, Western Kenya, November 2014, Maseno University
2. **Mr. Lawrence Muchabaiwa Tarupiwa.** MSc. thesis entitled: Phosphate Solubilizing Rhizobacteria associated with Dominant Grasses of Seronga in Okavango delta, Botswana. August 2014, University of Botswana
3. **Mr. Kerwin Lefever.** MSc. Thesis entitled: Effects of pH and phosphorus concentrations on the cultivation of *Salvia chamelaeagnea* grown in hydroponics, March 2014, Cape Peninsula University of Technology, Cape Town. South Africa.
4. **Mr. Victor Kagot Omondi.** MSc. Thesis entitled: Investigation of Determinants of Striga Suppression and Evaluation of Fungal Isolates as possible Bio-control Agents against the weed. July 2013. University of Nairobi
5. **Mr. Fredrick Owino.** MSc. thesis entitled: Bacteraemia and Selected antibiotic resistance by molecular methods in patients with acute febrile illness in a rural hospital in Kenya. 2012. Chepkoilel University College (University of Eldoret)
6. **Mr. C J Milne.** MSc thesis entitled “The Alleviation of Salinity Induced Stress with the Application of Silicon in Soilless Grown *Lactuca sativa* “Eish!” June 2012, Cape Peninsula University of Technology, Cape Town
7. **Mr. Joshua Mugendi Njiru.** MSc. thesis entitled: The Potential of Agrobacterium – Mediated Transformation of Farmer Preferred Sweet Potato Genotype in Kenya. March 2011, Department of Biochemistry, Kenyatta University
8. **Ms. M. Murwira.** MPHIL thesis entitled: Genetic Stability of Soybean Rhizobia; A

Comparative Study of Strain MAR1499 and MAR1495 from Zimbabwe with mother strain USDA 110 and USDA 122. March 2011, Department of Soil Science, University of Zimbabwe, Harare, Zimbabwe.

9. **Mr. Muoma John Vincent Omondi.** PhD thesis entitled: “*Agrobacterium tumefaciens* mediated introgression of *Nicotiana* Protein Kinase (NPK1) in selected Kenyan Maize genotypes to enhance drought tolerance.” February, 2009. Department of Biochemistry, Kenyatta University.
10. **Ms. Lydia M. Mugo.** MSc. thesis entitled: “Public Perception and detection of Genetically Modified Foods Imported into Kenya.” February, 2007. Department of Biochemistry, Kenyatta University.
11. **Mary N. Ogumbo.** Msc. thesis entitled: “Genetic Diversity of West African Pearl Millet Land Races as revealed by Simple Sequence Repeats (SSRs) Molecular Markers.” November, 2008. Department of Biochemistry, Kenyatta University.
12. **Mr. Rasha Adam Abdalla’s.** MSc. thesis entitled: “*Agrobacterium Tumerfaciens* mediated transformation of Sudanese maize using NPK1 gene for drought stress tolerance.” October 2007. Department of Biochemistry, Kenyatta University.
13. **Mr. John Kemboi Sitiency.** MSc thesis entitled: “Tissue culture responses of Elite Kenyan Inbred line via somatic Embryogenesis.” December 2006. Kenyatta University.
14. **Ms. Irene Wangari Njagi.** MSc. thesis entitled: “Towards optimization of parameters for regeneration and agrobacterium mediated transformations of Sweet Potato.” Department of Biochemistry, Kenyatta University
15. **Julia Chepete.** MSc. thesis entitled: “Effects to the Wet and Dry Cycles of the Okavango Delta on Soil Alkaline Phosphatase and Microbial Dynamics.” Department of Biological Sciences, University of Botswana.
16. **Mr. S. M. Maina.** MSc. thesis entitled: “Screening *Phaseolus vulgaris* for acid tolerance in Uasin Gishu District”. 1999. Department of Botany, Moi University
17. **Mr. Daniel N. Mungai.** MSc. thesis entitled: “Analyses of Microbial Hazards of Lake Victorian Nile Perch (*Latesniloticus*) processing at industrial level in Kenya. 2000. Department of Botany, Kenyatta University.
18. **Mr. John M. Maingi.** MSc thesis entitled: “A study of biological nitrogen fixation in maize-legume inter-crop” .1998. Botany Department, Kenyatta University

UNDER GRADUATE EXTENAL EXAMINATION

Kenyatta University, Department of Plant and Microbial Sciences: 2008-2012

University of Eldoret, Department of Biological Sciences: 2013-2015

Kaimosi Friends University College: 2016-2017

Technical University of Kenya: 2017-2018

LEADERSHIP AND RESPONSIBILITIES

1. Director Board of Postgraduate Studies, Jaramogi Oginga Odinga University of Science and Technology (JOOUST), 2015- 2018
2. Dean, School of Biological and Physical Science, JaramogiOgingaOdinga University of Science and Technology(JOOUST), 2010-2015
3. Patron, Christian Union, JOOUST, 2010- to date
4. Synod Member, Nyawita Parish, A.C.K Bondo, Diocese 2014- 2016
5. Coordinator, Biotechnology Program, College of Biological and Physical Sciences, University of Nairobi from 1996 – 2009 (13 years)
6. Coordinator of postgraduate programs, Botany department, University of Nairobi.1996-1998
7. Faculty of Science representative to the Deans Committee on Research grants; University of Nairobi.1997-1999
8. Chairperson, Faculty of Science, Research and Fundraising committee.
9. Examinations Officer, Department of Botany, 1992-1995, University of Nairobi
10. Chairperson, Bio-safety committee, School of Biological Sciences, University of Nairobi, 2003-2009
11. Chairperson, review committee on the B.Ed Science, Biologyprogramme, School of Biological Sciences, University of Nairobi.

AREAS OF RESEARCH

- Environmental risk Assessment Studies of Genetically Modified Organisms
- Applications of Molecular Biology Tools in the Study of the Population Structure of Symbiotic Nitrogen Fixation(BNF)
- Application of BNF in enhancing Food Security and Mitigation of Climate Change.
- Biological Nitrogen Fixation (BNF) inLegume of importance in Agriculture and Forestry, for improved Soil Fertility

PAST AND PRESENT PROJECTS

1. Genetic Diversity and Antifungal Activity of *Sennadidymobotrya*, KSh.2.5 Million (2011) funded by National Commission for Science and Technology, Kenya Government
2. UNEP-GEF Project on the Implementation of Cartagena Protocol on Bio-safety, (\$ 100,000) (2002-2006) collaborator, National Council for Science and Technology, Kenya Government.
3. GMO Guidelines Project, Funded by the Swiss government (2002-2005), no direct funding received, collaborators; International Centre for Insect Physiology and Ecology (ICIPE), Kenya Agricultural Research Institute, Swiss Technical Institute in Zurich.
4. Assessment of Ecological Impacts of Introducing Genetically Engineered Crops in Kenya, funded by US-AID, \$400,000 (2001-2005); Collaborator, International Centre for Insect Physiology and Ecology (ICIPE), Nairobi, Kenya.
5. Screening of *Phyllanthusspps* collected from three ecological zones in Kenya for antimicrobial properties. Funded by Deans Committee, University of Nairobi, KSh 250,000 (2007)
6. Regional Training Program on Molecular Biology and Biotechnology,
7. (1996-2007). Collaborator was Department of Biochemistry, University of Nairobi,
8. Department of Botany, Moi University, Department of Biochemistry and Biosciences, University of Sussex, UK and Department of Biosciences, University of Hertfordshire, UK.
9. Adoption of Bio-fertilizers for Soybean production in Kenya. Funded by Toyota Foundation, 3 Million Yens (1998-1999)
10. Environmental factors affecting biological nitrogen fixation in beans in some agricultural soils in Kenya. Funded by Beans Committee, University of Nairobi, KSh 250,000 (1996).
11. Nursery studies on nitrogen fixation of *Dalbergiamelanoxylon* funded by African Academy of Sciences and International Foundation for Sciences, Sweden, \$12,000 (1994).
12. Genetics analysis of *Phaseolus* bean rhizobia from some Kenyan soils. Funded by Third World Academy of Sciences, Italy, \$ 10,000 (1994).

BIOTECHNOLOGY TRAINING COURSES AND WORKSHOPS ORGANISED

Protein Molecular Biology

1. Protein Molecular Biology Training Course, 26th-30th September 2005. Partially funded by the University of Nairobi and the British Council Higher Education Link Program with the University of Hertfordshire, UK
2. Protein Molecular Biology Training Course, 2nd-6th August 2004. Partially funded by the University of Nairobi and the British Council Higher Education Link Program with the University of Hertfordshire, UK

Molecular Biology.

3. International Molecular Biology Training Course, 20th -24th March 2006. Partially funded by the University of Nairobi and the British Council Higher Education Link Program with the University of Hertfordshire, UK
4. International Molecular Biology Training Course, 20th -24th March 2005. Partially funded by the University of Nairobi and the British Council Higher Education Link Program with the University of Hertfordshire, UK
5. International Training Course on Molecular Biology Techniques and Biotechnology. 18th - 29th August, 1997. Sponsored by the University of Nairobi, International Training Course on Molecular Biology and Biotechnology. 7th - 18th September, 1998. Sponsored by University of Nairobi, UNESCO-ROSTA - Nairobi Office and British Council and University of Nairobi
6. International Molecular Biology Training Course, 28th February - 11th March 2005, partially funded by the University of Nairobi and the British Council Higher education link Program with the university of Hertfordshire, UK
7. National Training Course on Molecular Biology Techniques for Researchers - January 20th -15th February, 1997. Sponsored by the University of Nairobi and the Netherlands Government
8. Molecular Biology Techniques for Technologists from National Research Institutes and Universities - June - July 1996. Sponsored by the University of Nairobi and the

Netherlands Government.

REGIONAL WORKSHOPS ON BIOTECHNOLOGY

- Communication on Biotechnology: A training workshop on enhancing scientists' communication with the mass media 27th-29th November 2001. This workshop was organized on behalf of African Biotechnology Stakeholders Forum (ABSF), a regional biotechnology NGO.
- Regional Biotechnology Workshop 16-18 Sept. 1998. Funded by CTA Wageningen, The Netherlands, DAAD - Regional Office, Nairobi, UNESCO - Rosta, Nairobi and SIDA-SAREC, Stockholm, Sweden.

RESEARCH PROPOSAL WRITING TRAINING WORKSHOP 29TH JAN 2ND FEB 2001

Workshop for forestry and bioscience researchers from departments of Universities and institutes, Funded by International Foundation for Science, African Academy of Sciences, International Union of Forestry Research Organizations, Kenya Forestry Research Institute (KEFRI) and the University of Nairobi.

WORKSHOP ON FOOD SECURITY AND ENVIRONMENTAL SUSTAINABILITY IN A WORLD OF CHANGING CLIMATES 20TH 23RD FEBRUARY 2011

The workshop was jointly organized by Bondo University College (BUC) and Cape Peninsula University of Technology, Cape Town, South Africa, I was the BUC convener.

RECENT MEETINGS, CONFERENCES AND WORKSHOPS

1. 1st International Conference on Harnessing Science, Technology and Innovation for Sustainable Development and Good Governance, 23rd-26th June, 2015, Jaramogi Oginga Odinga University of Science and Technology, Bondo, Kenya
2. 4th African Conference on Edible and medicinal Mushrooms, 25th-28th May 2014, Masinde Muliro University of Science and Technology, Kakamega, Kenya

3. 5th Conference of Vice Chancellors and Deans of Science, Engineering and
 - a. Technology (COVIDSET), 6th–7th November 2013, Gaborone, Botswana
4. Resource person at the Regional Training Course in Waste Water Management at the University of Malawi, Chancellor College, 28th April to 4th May, 2013, Zomba, Malawi.
5. Conference on Trends and Opportunities in the Production, Processing and Consumption of Staple Food Crops in Kenya, 25-26 April 2013, Nairobi, organized by Kenya Industrial Research and Development Institute
6. Joint International Conference on Science & Technology for Development in Africa-
7. Cape Peninsula University of Technology, Cape Town, S.Africa, 26-28th June, 2012.
8. Resource person at a UNESCO Workshop on the Promotion of Women in Science in Africa, Sandton, Johannesburg, South Africa 19-20 July, 2012
9. UNESCO/DAAD-Alumni Conference “Water in Africa” In Collaboration with Maseno University and Bondo University college: Sustainable Water Management in African Countries. 1st – 3rd Oct. 2012, at Maseno University, Kenya
10. Resource person at the Workshop on Communication in Biotechnology for Educators. UNESCO/UoN/ISAAA 2nd to 5th November, 2009, Nairobi, Kenya.
11. 13th Conference of African Association of Biological Nitrogen Fixation (AABNF) 8th to 11th December, 2008, Hammamet, Tunis, Tunisia.
12. African Forum on Climate Change, Kigali, Ruanda 9-11 September 2008.
13. International Organization for Biological Control working group: Transgenic organisms in IPM and Biological Control. Hochi Minh City, Vietnam, 31st March - 6th April, 2004.

PUBLICATIONS

Thesis Written

1. MSc. Filtermud as a Carrier for Legume-Seed Inoculants, Botany Department, University of Nairobi. 1984
2. PhD. Genetic Diversity of Rhizobia Nodulating Common Beans, *Phaseolus vulgaris* from two Kenyan Soil Types, Department of Biochemistry and Biological Sciences, Wye College, University of London, UK, 1992.

Conference and Workshop Papers

1. **Beatrice Anyango**

Challenges of Legume Production in a World of changing Climates, a paper presented at Conference on Trends and Opportunities in the Production, Processing and Consumption of Staple Food Crops in Kenya, 25-26 April 2013, Nairobi, organized by Kenya Industrial Research and Development Institute

2. **Beatrice Anyango and Cecelia Nzau.**

A risk assessment study on the impacts of *Bacillus thuringiensis* (Bt) Cry1Ab toxins on nodulation of the common bean, *Phaseolus vulgaris*. L. Presented at Joint International Conference on Science & Technology for Development in Africa: Cape Peninsula University of Technology, Cape Town, S. Africa, 26-28th June, 2012.

3. **Beatrice Anyango**

Accelerating the Participation and Retention of Women in Teaching and Research in Science and Engineering: The Role of Universities. A workshop on the Promotion of Women in Science in Africa, Johannesburg, South Africa, 19-20 July, 2012

JOURNAL PUBLICATIONS

1. Pascaline Jeruto, Peter Arama, **Beatrice Anyango**, Regina Nyunja, Catherine Taracha and Sylvia Opiyo (2017). Morphometric Study of *Senna didymobotrya* (Fresen.) H. S. Irwin and Barneby in Kenya. *Journal of Natural Sciences*, 7, (6): 54 - 69; ISSN 2224-3186 (Paper) ISSN 2225-0921 (Online). Research www.iiste.org
2. Jeruto, P., Arama, P. F., **Anyango, B.**, Akenga, T., Nyunja, R, Khasabuli, D. (2016). *In vitro* antifungal activity of methanolic extracts of different *Senna didymobotrya* (Fresen.) H.S. Irwin & Barneby plant parts. *African Journal Traditional Complementary Alternative Medicines*. 13(6):168-174 1010/ajtcam. v13i6.24
3. Jeruto, P., Arama, P. F., **Anyango, B.**, Maroa, G. (2017). Phytochemical screening and antibacterial investigations of crude methanol extracts of *Senna didymobotrya* (Fresen.) H. S. Irwin & Barneby. *Journal of Applied Biosciences* 114: 11357-11367; ISSN 1997-5902

4. Okonjo Edward, Yole Dorcas, Eric Korir, Nguu Edward, **Anyango Beatrice** and Ogoyi Dorington (2015). Detection of proteins induced in the haemolymph of *Biomphalaria pfeifferi* infected with *Schistosoma mansoni*. Journal of Applied Biosciences 88:8211– 8222
5. Onyango Benson, **Anyango Beatrice**, Nyunja Regina, P.K.Koech, Robert A. Skilton and Stomeo Francesca (2015). Morphological, genetic and symbiotic characterization of root nodule bacteria isolated from Bambara ground nuts (*Vigna subterranean* L. Verdc) from soils of Lake Victoria basin, western Kenya. Journal of Applied Biology and Biotechnology Vol.3(01), pp001-010
6. John Otuoma, George Ouma, David Okeyo and **Beatrice Anyango** (2014). Species Composition and stand structure of secondary forests in a Kenyan rainforest. Journal of Horticulture and Forestry. Vol.6 (4) pp 38-49
7. Otuoma, John, Beatrice Anyango, George Ouma, David Okeyo, Gabriel M Muturi, Boniface Oindo, (2016). Determinants of aboveground carbon offset additionally in plantation forests in a moist tropical forest in western Kenya. Forest ecology and management. Vol. 365. Pp. 61-68
8. Enos W Wambu, Stephen G Agong', **Beatrice Anyango**, Walter Akuno and Teresa Akenga (2014). High fluoride water in Bondo-Rarieda area of Siaya County, Kenya: a hydrogeological implication on public health in the Lake Victoria Basin. BMC Public Health 2014, **14**:462
9. Nancy N. Muruga and **Beatrice Anyango** (2013). A Survey of Extremophilic Bacteria in Lake Magadi. Columbia International Publishing: American Journal of Molecular and Cellular Biology (2013) 1: 14-26
10. AD Njoroge, **B Anyango**, SFDossaji (2012) Screening of *Phyllanthus* Species for Antimicrobial properties. Chemical Sciences Journal, Vol.2012: CSJ-56
11. Amugune N.O. **Anyango B** and Mukiama T.K. (2011) Agrobacterium-Mediated Transformation of Common Bean. African Crop Science Journal Vol.19, No. pp.137-147
12. Wepukhulu, M, N, Kimenju J, **Anyango B**, Wachira P and Kyallo G (2011) Effect of Soil Fertility Management Practices and *Bacillus subtilis* on Plant Parasitic Nematodes associated with Common Beans *Phaseolus Vulgaris*. Tropical and Subtropical Agroecosystems. 139 (2011):27-34

13. Lelman E.K., Osir E. O, Jefwa J., **Anyango B.** and Boga H.I. (2007) Preliminary Investigations reveal that *Bacillus thuringiensis* delta –endotoxin Cry1A(c) incorporated in soil does not affect *arbuscular mycorrhiza* in *Sorghum bicolor* (L) (Moench) .Journal of tropical Microbiology and Biotechnology Vol.3(1); pp.12-18.
14. Maina S.M, Gudu S., Onkwere A.O and **Anyango B.** (2006). Response of Common bean (*Phaseolus vulgaris* L.) cultivars to *rhizobium* inoculation and phosphorus fertilizer application in acid soils. Journal of East African Natural Resource Management: Vol.(1) pp. 98-110.
15. **Anyango B.**, Keya S.O. and Owino, F. (2005.) Occurrence of Nodulation in Leguminous Trees in Kenya. Journal of Tropical Microbiology and Biotechnology. Vol.4 (1) pp.22-26.
16. Giller, K.E., **Anyango**, B., Beynon J. and Wilson K.J. (1992). Using Molecular tools to study the Ecology of Tropical Rhizobia. *J. Sci. Food Agri.* **60**: 394.
17. Giller, K.E., **B. Anyango**, J.L. Beynon and K.J. Wilson (1994). The origin and diversity of rhizobia nodulating *Phaseolus vulgaris* L. in African soils p.57-62. In J.I. Sprent and D. Mckey (ed), Advances in Legume systematics 5: The Nitrogen Factor. Royal Botanic Gardens, Kew, England.
18. **Anyango B.**, Giller K., Wilson K.J. and Beynon J.L. (1995). The genetic diversity of rhizobia nodulating *Phaseolus vulgaris* in two Kenya soil types. *Applied and Env. Microb.* **61**: 4016-4021.
19. **Anyango B.**, Wilson K. J. and Giller K. (1998). Competition in Kenyan soils between *Rhizobium leguminosarum* biovar *phaseoli* strain Kim5 and *R. tropici* strain CIAT 899 using *gus* marker gene. *Plant and Soil* **204**: 69-78.

CONTRIBUTIONS TO BOOK CHAPTERS

1. Toan Van P., Binh Hoang Ngong, B.H., **Anyango B.**, Zwahlen C., Manachini B., Andow D.A. and Wheatley, R. (2008) Potential Effects of Transgenic Cotton on Soil Ecosystem Processes in Vietnam: In; Environmental Risk Assessment of Genetically Modified Organisms Vol.4. Eds. David E. Andow, Angelika Hilbeck and Nguyen Van Tuat. CABI Publishing, Wallingford, UK.
2. Mendonca Hagler L.C., de Melo I.S., Valadres-Inglis M.C., **Anyango B.**, Siqueira J.O., Pham Van Toan and Wheatley R.A. (2005). Non-Target and Biodiversity Impacts in Soil.

Methodologies for Assessing Bt. Cotton in Brazil, pp. 225-260. In. Hilbeck A., Andow D.A. and Fontes E.M.G (Eds.). Environmental Risk Assessment of Genetically Modified Organisms. Vol. 2. Methodologies for Assessing Bt. Cotton in Brazil, CABI Publishing, Wallingford, UK.

3. Birch A.N.E., Wheatley R., **Anyango B.**, Arpaia S., Capalbo D., Getu E. Degaga, Fontes E., Kalama P., Lelmen E., Lovei G., Melo I. S., Munyekho F., Ngi-Song A., Ochieno D., Ogwang J., Pitelli R., Shuler T., Setamou M., Sithanatham S., Smith J., Van Son N., Songa J., Sujii E., Tan T.Q., Wan F. H. and Hilbeck A. (2004). Biodiversity and Non-target Impacts: a Case Study of Bt Maize in Kenya, pp. 117-186. In. Hilbeck, A. and Andow, D. A (eds.) Environmental Risk Assessment of Genetically Modified Organisms. Vol. 1. A Case Study of *Bt* Maize in Kenya. CABI Publishing, Wallingford, UK.

MEMBERSHIP OF EDITORIAL BOARD

Journal of Tropical Microbiology and Biotechnology

MEMBERSHIP OF PROFESSIONAL SOCIETIES

1. Kenya Society of Microbiology (KSM)
2. African Association for Biological Nitrogen fixation (AABNF)
3. African Women in Science (AWSE)
4. Kenya Daad Students Association (KDSA)

REFEREES

1. **Prof. Rosemary Atieno**

Institute of Development Studies,
University of Nairobi,
P.O. Box 30197-00100, Nairobi
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Mobile. +254 722295153

2. **Prof. Jenasio I. Kinyamario,**

School of Biological Sciences,
University of Nairobi,
P.O. Box 30197-00100, Nairobi
E-mail: jkinyamario@gmail.com
Tel. +254-733623318/723-072080

3. **Ven. Monica Owiti**

Vicar, St. Andrews, ACK, Nyawita
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NOVEMBER, 2022