CURRICULUM VITAE

Prof. Douglas Watuku Miano

BSc. (Agriculture), MSc. (Plant Pathology), PhD (Plant Virology)

Associate Professor

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a. SUMMARY

Prof. Douglas Watuku Miano is an Associate Professor at the Department of Plant Science and Crop Protection, Faculty of Agriculture, College of Agriculture and Veterinary Sciences, University of Nairobi. He holds a Ph.D degree (Plant Virology) which he attained in May 2008 from Louisiana State University, USA. He also holds MSc. in Plant Pathology (1999) and BSc. Agriculture (1995) degrees, both from the University of Nairobi. He is an accomplished scholar with proven track record in training, agricultural research and publications. He has over 10 yearsô experience in research project management and has held different leadership positions at the University and in community service. He is focused on providing leadership and skills in development and responsible use of modern biotechnology in sub-Saharan Africa.

Prof. Miano has been working at the Department of Plant Science and Crop Protection since 2009, initially on part-time basis (2009 ï 2011), then as full time lecturer on permanent employment (2011 ï 2014), as a Senior Lecturer (2014 -2019) and as an Associate Professor (October 2019 to date). He has been teaching plant virology, plant biotechnology, seed legislation and accreditation, principles of crop protection, postharvest pests and diseases, general microbiology, and other plant pathology and crop protection courses to graduate and undergraduate students. Before joining UoN, Prof. Miano worked as a Senior Research Scientist at the Kenya Agricultural Research Instituteôs (KARI) Biotechnology Center (now Kenya Agricultural and Livestock Research Organization, KALRO) situated at the National Agricultural Research Laboratories (NARL) campus in Nairobi.

Prof. Miano is an accomplished researcher, scholar, trainer and leader. He is actively involved in research activities particularly in cassava, maize, sweetpotato, beans, and pepper virus diagnostics, characterization and management. He is the Kenyan Principal Investigator in the development of transgenic cassava with resistance to viruses under the Virus Resistant and Nutritionally Enhanced Cassava for Africa (VIRCA Plus) project. Through the VIRCA Plus project, Prof. Miano has ably led a team of Kenyan scientists, in collaboration with regional and international scientists, to successfully develop a transgenic cassava with high levels of resistance to cassava brown streak disease, a major threat to cassava production in the region. He was also one of the lead scientists in the East African region who identified and developed strategies to manage maize lethal necrosis (MLN) disease, which had also emerged as a new threat to maize production in the region. He was a member of the taskforce appointed by the

Kenya government to identify the causal agents of MLN in Kenya and come up with ways to manage the disease, and the Principal Investigator in a regional ASARECA funded project on ôIntegrated Management of Maize Lethal Necrosis in Eastern and Central Africaô that covered seven countries and eleven collaborating institutions. Prof. Miano had also spent three months in 2009 at the Food and Environmental Research Agency (FERA, UK) participating in sequencing and development of diagnostic assays for viruses causing cassava brown streak disease. He has been involved in several other research projects in different aspects of plant virology, plant pathology, crop protection, plant biotechnology, and other fields of agriculture, in collaboration with national, regional and international scientists.

Apart from formal training and research in agricultural sciences, Prof. Miano has trained widely and gained a lot of experience in science communications, biosafety and regulatory issues in the management of genetically modified (GM) crops and other modern agricultural technologies. He is a biosafety expert for Kenya under Convention on Biological Diversity (CBD) and has been involved in the international negotiations as a Kenyan delegate at the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety (2014, 2016 and 2018). He is also trained on Negotiation Skills and Techniques at international level under the United Nations Institute of Training and Research and African Union NEPAD Agency.

As a scholar and trainer, Prof. Miano has a track record in supervising and mentoring postgraduate students and early career scientists. He has successfully supervised and mentored over 20 graduate (PhD and Masters) students to completion, while others are currently at different levels of research and thesis writing. Numerous undergraduate and diploma students have also done and completed their special projects under his supervision. His academic and research career has also been exemplary as demonstrated by publications in peer review journals. He has co-authored over 140 journal and conference publications. He has attended and presented papers in numerous conferences and workshops. He has also won several scientific awards and recognitions including KARI Scientist of the Year Award in 2010-11. Prof. Miano is also an accomplished athlete with various awards in track and field events.

Prof. Mianoôs leadership skills were honed early while still in high school where he was a school captain for two and a half years. He has served in various leadership positions in various levels at the University. On several occasions, he has acted as the Chairman of the Department. He has been the Coordinator of the Diploma Program (2014 to-date), and chair and member of different

committees at the Department and Faculty. While at KALRO, he was the program leader in root and tuber crops research and plant disease diagnostics at the Biotechnology Centre.

Prof. Miano has been active in various societal leadership roles including serving as the member of the Board of Management, Kihuro Secondary School in Muranga County where he is also the chair of the academic committee (2017 to-date); Member of the Southern Nairobi Regional Council under the Fellowship of Christian Unions (FOCUS) where he also serves as the University and Faculty Engagement Coordinator (2018 to-date); Member of the Advisory Committee of Upper Kabete Campus Christian Union (2018 to-date); Member of the Steering Committee and Editorial Committee under the Network of African Science Academies (NASAC) Food and Nutrition Security and Agriculture (FNSA) Report on Opportunities and Challenges for Research in Food and Nutrition Security and Agriculture in Africa (2016-2018); Member of the National Biotechnology Development Policy Review Committee (2016-2017); and a Member of the Local Organizing Committee for the Workshop to Establish UK-East African Collaborations in Practical Synthetic Biology (2016ï 2017), among others. Prof. Miano also served as the President of the International Christian Fellowship (ICF) in Louisiana State University, USA (2005 ï 2007) and the Chairman of the Graduate Fellowship at Upper Kabete Campus, UoN (1997-1998).

Overall, Prof. Miano has shown consistent leadership and has maintained a vibrant research and academic career marked by high quality publications and success in grant awards; a strong commitment to mentorship of undergraduate, post-graduate and early career scientists; and established and maintained national, regional and international collaborations that has helped him emerge as a strategic leader in agricultural sciences, modern biotechnology and biosafety.

b. PERSONAL DETAILS

Name:	Douglas Watuku Miano, Ph.D
Date of Birth:	May, 1970
Marital Status:	Married
Profession:	Plant Pathologist (Virology)
Nationality:	Kenyan
Current Position:	Associate Professor, Department of Plant Science and Crop Protection, Faculty of Agriculture, College of Agriculture and Veterinary Sciences, University of Nairobi
Contact Address:	P. O. Box 29053 00625, Kangemi, Nairobi. Tel: +254 712 733383 (Cell), +254 780 919259 Email: dmiano@uonbi.ac.ke; dwatuku@yahoo.com; dmiano@gmail.com

c. EDUCATION/ACADEMIC QUALIFICATION

1.	Ph.D (Plant Pathology: Virology):	Louisiana State University, USA (2008)
2.	MSc (Plant Pathology):	University of Nairobi, Kenya (1999)
3.	BSc. (Agriculture):	University of Nairobi, Kenya (1995)
4.	Kenya Certificate of Secondary Education:	Gititu Secondary School (1989)
5.	Kenya Certificate of Secondary Education:	Kihuro Primary School (1985)

d. WORK EXPERIENCE - TEACHING

1. Associate Professor (October 2019 to-date)	Department of Plant Science and Crop Protection, University of Nairobi
2. Senior Lecturer (November 2014 ï October 2019)	Department of Plant Science and Crop Protection, University of Nairobi
3. Lecturer (November 2011 ï November 2014)	Department of Plant Science and Crop Protection, University of Nairobi
4. Part-time Lecturer (2009 ï 2011)	Department of Plant Science and Crop Protection, University of Nairobi
5. Senior Research Scientist (2009 ï 2011)	Kenya Agricultural Research Institute
6. Research assistant (2003 ï 2008)	School of Plant, Environmental and Soil Sciences,

	Louisiana State University, USA
7. Research Scientist (1999 ï 2008)	Kenya Agricultural Research Institute
8. Research Assistant (1998 ï 1999)	Kibwezi Irrigation Project, University of Nairobi

e. WORK EXPERIENCE - ADMINISTRATIVE

1. Acting Chairman, Department of Plant Science and Crop Protection, University of Nairobi at different times between 2014 and 2020
2. Coordinator, Diploma in Crop Protection Program, Department of Plant Science and Crop Protection, University of Nairobi, 2014 to-date
3. Unit Head, Root and Tuber Crops Research, Biotechnology Centre, Kenya Agricultural Research Institute, 2008 ï 2011
4. President, International Christian Fellowship (ICF), Louisiana State University, USA, 2005 ï 2007

f. MEMBERSHIP OF COMMITTEES AND OTHER ORGANS OF THE UNIVERSITY OF NAIROBI

1. Member, Faculty committee on Resolution of Public Complaints, Faculty of Agriculture, University of Nairobi, 2019
2. Member, Faculty Postgraduate Studies Committee, Faculty of Agriculture, University of Nairobi 2018 to-date
3. Member, Curriculum development committee, Department of Plant Science and Crop Protection, 2018 to-date
4. Member, Committee on student mentorship, Department of Plant Science and Crop Protection, 2018 to-date
5. Member, committee writing proposal on Strengthening of Higher Agricultural Education in Africa (SHAEA), College of Agriculture and Veterinary Sciences, 2018

g. COMMUNITY, PROFESSIONAL, NATIONAL AND INTERNATIONAL SERVICE

1. Member, Board of Management and Chair of Academic Committee, Kihuro Secondary School, Murangôa, Kenya, 2017 to-date.

2. Member, Southern Nairobi Regional Council and University and Faculty Engagement Coordinator, Fellowship of Christian Unions (FOCUS), 2018 to-date
3. Member, Advisory Committee, Upper Kabete Campus Christian Union, 2018 to-date
4. Member, National committee writing proposal for East and Central Africa Agricultural Transformation (ECAAT) Project, 2017 - 2018
5. Member of the Steering Committee and Editorial Committee, NASAC FNSA Report on Opportunities and Challenges for Research in Food and Nutrition Security and Agriculture in Africa, 2016-2018
6. Member, National Biotechnology Development Policy Review Committee, 2016-2017
7. Member, Local Organizing Committee, Workshop to Establish UK-East African Collaborations in Practical Synthetic Biology, 2016ï 2017
8. Member, University of Nairobi Representative, Plant Virology Specialist Government Multi-displinary Multi-institutional Taskforce on Eradication of Maize Lethal Necrosis Disease in Kenya, 2012

h. <u>SELECTED SHORT COURSES AND TRAININGS ATTENDED</u>

1. Training on ñNegotiation Skills and Techniques" at International Negotiations. Organized by United Nations Institute of Training and Research and African Union NEPAD Agency. September 5 ï 6, 2018, Addis Ababa, Ethiopia.
2. Professional course in ñPhD Supervision Trainingò. Organized by University of Nairobi Enterprises and Services Limited. 4th ï 7th May, 2015. Manzoni Lodge, Machakos, Kenya.
3. Training course on Social Media in Science Communication. Organized by the Virus Resistance Cassava for Africa Project and ISAAA AfriCenter. 15th May, 2015, Jacaranda Hotel, Nairobi
4. Training course on Biosafety Communications organized for the Virus Resistant Cassava for Africa (VIRCA) Project Team. 26th - 27th August 2013. Naivasha, Kenya
5. Training on use of DNA capture kits for PCR diagnostics of Banana bunchy top virus (BBTV), the causal agent of banana bunchy top disease (BBTD). 6 ï 9 December, 2010. NARO, Kawanda, Kampala, Uganda.
6. Module II and III training on biotechnology stewardship. July 5-9, 2010. KARI Biotech, Nairobi

7. Training on Biotechnology product development. August 16-18, 2010. Kampala, Uganda.
8. Training on Biosafety Communication and issues management on confined field trials. 10-12 May 2010. South Africa
9. Training for compliance, communication and conduct of regulated cassava trials. March 1-5, 2010. KARI Kakamega
10. Training on Intellectual Property (IP) for researchers in RandD institutions. Feb 24-27, 2010. Lukenya Getaway, Machakos
11. Module I training on biotechnology stewardship. January 19-20, 2010. KARI NARL, Nairobi
12. Three-month post-doctoral attachment at Food and Environmental Research Agency Agency, UK. Participated in *Cassava brown streak virus* sequencing and development of diagnostic assays. July ï September 2009.
13. Training on óBiosafety in Contained and Confined Field Experimentationsô at KARI-NARL coordinated by Africa Harvest and KARI. 1st ï 5th September 2008.

i. <u>SCHOLARSHIPS/FELLOWSHIPS/ACADEMIC RECOGNITION</u>

1. KARI Scientist of the Year Award. Chairmanôs Commendation Award for exemplary duty Performance 2010-2011. Awarded on 22nd December 2011, KARI Headquarters, Nairobi, Kenya.
2. 1st Best Scientific Presentation in Biotechnology at the 13th Biennial Scientific Conference held on 22nd ï 26th October 2012, at KARI Headquarters, Nairobi, Kenya.
3. American Phytopathological Society Foundation William Malcolm Brown, Jr. Student Travel Award to attend the Joint Meeting of The American Phytopathological Society and Society of Nematologists in San Diego, California, August, 2007.
4. 2nd Best Scientific Presentation in Crop Protection at the 11th Biennial Scientific Conference held on 10 to 14th November 2008, at KARI Headquarters, Nairobi, Kenya.
5. American Phytopathological Society Foundation William Malcolm Brown, Jr. Student Travel Award to attend the Joint Meeting of The American Phytopathological Society and Society of Nematologists in San Diego, California, August, 2007.
6. 3rd Best Warren S. Barham Ph.D Graduate Student Paper Comptetition Award. Southern Region of the American Society Horticultural Science 6th Annual Conference, Mobile, Alabama, February, 2007.

7. Garden Show Scholarship. Presented by the Department of Horticulture, Louisiana State University on 20th April for the Fall Semester of 2007.
8. Donald Newsome Memorial Scholarship. Presented on 20th April 2007 by Department of Horticulture, Louisiana State University for the Fall Semester, 2007.
9. James F. Fontenot Memorial Scholarship. Presented on 21st April 2006 by Department of Horticulture, Louisiana State University for the Fall Semester, 2006.
10. McKnight Foundation Scholarship for Ph.D Training under the KARI McKnight Sweetpotato Project, 2003 ï 2008.
11. University of Nairobi Staff Development Scholarship for MSc. training in Plant Pathology, 1996 ï 1999.

j. DOCTOR OF PHILOSOPHY (PHD) STUDENTS SUPERVISED

Graduated:

1. Mudde Barnabas. Distribution of maize lethal necrosis disease, its vectors and host plants in major maize growing areas of Uganda. Ph.D in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduate September 2019.** Supervisors: Florence Olubayo, **Douglas Miano**, Dora Kilalo and Godfrey Asea (NARO, Uganda).
2. Teresa N. Kinyungu. Transmission of maize lethal necrosis disease viruses and the effect of co-infection with *Maize chlorotic mottle virus* and *Sugarcane mosaic virus*. Ph.D in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduate December 2018.** Supervisors: James Muthomi, **Douglas Miano** and Florence Olubayo
3. Paul Kuria. Molecular characterization of natural resistance mechanisms of cassava genotypes to cassava-infecting Geminiviruses. Ph.D in Biotechnology, Institute of Biotechnology Research, Jomo Kenyatta University of Agriculture and Technology, Kenya. **Graduated 2016.** Supervisors: Elijah Ateka (JKUAT), **Douglas Miano,** Justus Onguso (JKUAT) and James Carrington (DDPSC, USA)

Research/Writing:

4. Bramwel Waswa Wanjala. Distribution, diversity, detection and assessment of yield impact of begomoviruses infecting sweetpotato in Kenya. Ph.D in Plant Health Science and

Management, Horticulture Department, Jomo Kenyatta University of Agriculture and Technology, Kenya. Supervisors: Elijah Ateka (JKUAT), **Douglas Miano**, Jan Kreuze (International Potato Centre).

5. Abdul Galgallo Huri. Value of soil-plant spectral tests in reducing farmer decision uncertainity. Ph.D, Institute of Nuclear Science, University of Nairobi. Supervisors: Michael Gatari, Keith Shepherd and **Douglas Miano.**
6. Paul Nyamwamu. Transmission mechanism of maize lethal necrosis disease (MLND) in Kenya. Ph.D in Agricultural Science and Technology, Kenyatta University. Supervisors: Maina Mwangi (Kenyatta University), Ruth Kahuthia (Kenyatta University) and **Douglas Miano.**
7. Charles Nkonge. Effect of zero tillage and residue retention on mycotoxin contamination in a maize-bean intercrop farming system. Ph.D in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Supervisors: William Maina Muiru, **Douglas Miano** and George Cheminingôwa.
8. Miriam J. Otipa. Characterization and Distribution of Passion Fruit Woodiness Virus in Kenya. Ph.D in Horticulture, Jomo Kenyatta University of Agriculture and Technology, Kenya. Supervisors: Elijah Ateka (JKUAT), Edward Mamati (JKUAT) and **Douglas Miano.**
9. Esther Kimani. Studies on transmission and detection of *Maize chlorotic mottle virus* in maize seed. Ph.D in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Supervisors: **Douglas Miano**, William Maina Muiru, Ann Wangai (KALRO) and Isaac Macharia (KEPHIS).
10. Rabson Mulenga. Thesis: Molecular characterization of viruses infecting common bean (*Phaseolus vulgaris L.*) and reaction of bean genotypes to virus infection in Zambia. Ph.D in Plant Pathology, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Supervisors: **Douglas Miano**, Felister Nzuve, Olufemi J. Alabi (Texas A&M, USA) and Evans Kaimoyo (University of Zambia).
11. Bancy Waithera. Identification, distribution and management of viral diseases and associated vectors in pepper (Capsicum spp) in Rwanda. Ph.D in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Supervisors: Dora Kilalo, **Douglas Miano** and John Kimenju.

k. MASTER OF SCIENCE STUDENTS SUPERVISED

Graduated:

1. Felix Gatunzi. Determining the role of seed and soil in the transmission of viruses causing maize lethal necrosis disease in maize. MSc. in Plant Pathology, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated September 2018.** Supervirors: **Douglas Miano**, Daniel Mukunya and Suresh Lingadahalli Mahabaleswara (CIMMYT)
2. Dickson Lwabulala. Validation of triple antibody sandwich- enzyme linked immunoassay technique in detection of cassava brown streak viruses. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated September 2018.** Supervisors: **Douglas Miano**, William Maina Muiru and Fred Tairo (Mikocheni Agricultural Research Institute, Tanzania).
3. Jalal Elden Chol Atem. Evaluation of maize genotypes for resistance to *Maize chlorotic mottle virus* in Kenya. MSc. in Plant Breeding and Biotechnology, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated September 2018.** Supervisors: Felister Nzuve, **Douglas Miano** and Ann Wangai (KALRO)
4. Gidraf Okeyo. Evaluation of tolerance level of different potato genotypes to virus pressure in the field and management of seed-borne potato viruses. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated 2017.** Supervisors: Rama Devi Narla, **Douglas Miano** and Elmar Schult-Geldermann.
5. Rose Nyakundi. Reaction of different maize genotypes to infection by maize lethal necrosis disease and transmission of viruses causing the disease from soil and plant debris. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Status: **Graduated 2017**. Supervisors: **Douglas Miano**, Dora Kilalo and Daniel Mukunya.
6. Maliha Hashim Saggaf. Immunohistochemical localization of cassava brownstreak virus and influence of sequence enhancing geminiviruses symptoms on cassava brown streak disease development. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated September 2017.** Supervisors: **Douglas Miano**, Dora Kilalo and Peter Sseruwangi (Mikocheni Agricultural Research Institute, Tanzania).

7. Getrude Alwora Okutoyi. Spatial and temporal dynamics of coffee berry disease and coffee leaf rust in Murangôa County, Kenya. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated September 2016**. Supervisors: **Douglas Miano**, Eunice W. Mutitu, Elijah Gichuru (CRI, KALRO) and Fabrice Pinard (ICIPE).
8. Hilda Meso Odongo. Distribution of cassava bacterial blight and reaction of elite cassava genotypes to the disease in Kenya. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. Status: **Graduate December 2016**. Supervisors: **Douglas Miano**, William Maina Muiru and Agnes Mwangôombe.
9. Faith Mumbua Maluki. Gene action and the influence of genotype-by-environment interaction on elite maize hybrids evaluated in contrasting disease and moisture environments. MSc. in Plant Breeding and Biotechnology, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. G**raduate December 2016**. Supervisors: **Douglas Miano**, Felister Nzuve and Yoseph Beyene (CIMMYT).
10. Mary Akisia Adungosi. Line by tester analysis of elite tropical ï temperate maize lines under water-stress and non-stress environments. MSc. in Plant Breeding and Biotechnology, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. G**raduated December 2016**. Supervisors: **Douglas Miano**, Felister Nzuve and Yoseph Beyene (CIMMYT).
11. Geofrey Sing'ombe Ombiro. Detection of cassava viruses from elite genotypes and characterization of cassava mosaic begomoviruses from farmers' fields in Kenya. MSc in Plant Health Science and Management. Jomo Keyatta University of Agriculture and Technology. Graduated 2016. Supervisors: Elijah Ateka (JKUAT), **Douglas Miano** and Stephen Githiri Mwangi (JKUAT).
12. Rabson Mpundu Mulenya. Distribution, molecular detection and characterization of cassava mosaic geminiviruses in Zambia. MSc. in Crop Protection, Department of Plant Science and Crop Protection, University of Nairobi, Kenya. **Graduated 2015.** Supervisors: **Douglas Miano**, Eunice W. Mutitu and Patrick Chikoti (ZARI, Zambia).

13. Solomon Maina. Detection, distribution and genetic diversity of *Sweetpotato leaf curl virus* from western, coast and central regions of Kenya. MSc. Biotechnology, Kenyatta University,

Kenya. **Graduated August 2014.** Supervisors: Stephen Runo (Kenyatta University), **Douglas Miano** and Paul Njiru (Kenya Polytechnic University College).

14. Grace Wacheke Mungai. Development of an in vitro protocol for the elimination of viruses from banana. MSc. in Biotechnology, Jomo Kenyatta University of Agriculture and Technology, Kenya. **Graduated November 2012.** Supervisors: Elijah Ateka (JKUAT), Aggrey Nyende (JKUAT) and **Douglas Miano.**
15. John Irungu. Assessment of effects of important cassava viruses on farmer preferred cassava cultivars. MSc. in Biotechnology, Kenyatta University, Kenya. **Graduated July 2011.** Supervisors: Joseph Ngeranwa (Kenyatta University and **Douglas Miano**.

Writing / Research:

16. Roy Gitonga Kiambi. Molecular variability of Sugarcane mosaic virus and reaction of maize genotypes to infection by the virus in Kenya. MSc in Microbiology, School of Biological Sciences, University of Nairobi. Supervisors: Maina Wagacha, **Douglas Miano** and Ann Wangai (KALRO).
17. Ken Monjero. Role of plant parasitic nematodes in the development of maize lethal necrosis disease in Maize in Kenya. MSc. in Crop Protection, University of Nairobi. Supervisors: Douglas Miano and John Kimenju.
18. Perpetuar Wangari Ngôangôa. Identification and characterization of causative agents of cassava leafspot and reaction of cassava genotypes to infection by the pathogen in Kenya. MSc in Microbiology, School of Biological Sciences, University of Nairobi. Supervisors: Maina Wagacha and **Douglas Miano**.
19. Michael Njoroge. Identification, incidence and distribution of viruses infecting tree tomato (Solanum betaceum CAVS) in Kenya. MSc. in Crop Protection, University of Nairobi. Supervisors: **Douglas Miano**, Rama Davi Narla and Paul Kuria (KALRO).
20. Rose Pachi. Incidence and distribution of Groundnut rosette virus and reaction of groundnuts to infection by the virus in Tanzania. Supervisors:Douglas Miano, Dora Kilalo and Elly Kafiriti (NARI, Tanzania).
21. Moffat Njoroge. Whitefly diversity and their efficiency in transmission of cassava brown streak and mosaic diseases in cassava. MSc. in Crop Protection, University of Nairobi. Supervisors: Dora Kilalo, Douglas Miano and Daniel Mutisya (KALRO).

22. Joyce Waithera Eunice. Prevalence of maize lethal necrosis disease in major seed production areas and interaction of viruses causing the disease in Kenya. MSc. in Crop Protection, University of Nairobi. Supervisors: **Douglas Miano**, William Maina Muiru and Eunice W. Mutitu.
23. Arnet Nyambura Kuria. Evaluation of digital imagery tools for precision and high throughput phenotyping of foliar diseases. MSc. in Plant Breeding and Biotechnology, University of Nairobi. Supervisors: Felister Nzuve, **Douglas Miano** and Gowda Manje (CIMMYT).
24. Diana Nafula Masika. Screening for maize germplasm with resistance to Sugarcane mosaic virus. MSc. in Plant Breeding and Biotechnology, University of Nairobi. Supervisors: Felister Nzuve and **Douglas Miano**.

l. SELECTED UNDERGRADUATE STUDENTS SUPERVISED- B.SC. AGRICULTURE (CROP POTECTION MAJOR) SPECIAL PROJECTS

1. Nyamongo Henry. 2019. Use of selected intercrops in the control of aphids and diamondback moth in kales.
2. Kithaka Kevin Waweru. 2018. The role of weeds as potential sources of viruses in potato fields.
3. Simon Kiio. 2018. The role of wood ash in control of cutworms in maize.
4. Karani J. Alex. 2018. Determining the alternative host crops of *Potato virus Y* in Muguga, Kenya
5. Jepkoech Anna. 2016. Effect of moisture stress on severity of maize lethal necrosis disease in maize.
6. Cherono Ann. 2015. Contribution of nematodes in the development of maize lethal necrosis disease in maize.
7. Purity Mumbua Muli. 2015. Contribution of Fusarium species to maize lethal necrosis disease development.
8. Wiliter Chepkororir. 2014. Susceptibility of maize varieties to maize lethal necrosis disease

m. SELECTED DIPLOMA (CROP POTECTION) STUDENTS SUPERVISED- SPECIAL PROJECTS

1. Simon Peter Kimani. 2018. Effect of time of storage of maize leaf samples on detection of *Maize chlorotic mottle virus*.
2. Alex N. Mburu. 2018. Determining the reaction of different irish potato genotypes to infection by late blight disease.
3. Ongadi Christine Oside, 2016. Reaction of different maize genotypes to infection by *Sugarcane mosaic virus.*
4. Martin Muriuki. 2016. Reaction of different kale varieties to infection by viruses.
5. Pasquina Atak Garang. 2016. Reaction of different maize varieties to infection by *Maize streak virus.*

n. ACADEMIC PUBLICATIONS

In refereed journals

1. Waweru, B.W., Kilalo, D.C., Kimenju, J.W., Rukundo, P., **Miano, D.W. 2020**. Farmersô knowledge and perceptions of viral diseases of hot pepper (Capsicum sp.) and their management in Rwanda. ***Fundamental and Applied Agriculture*** **5(3): 319–329.** doi: 10.5455/faa.113641
2. Mulenga, R.M., **Miano, D.W.,** Kaimoyo, E., Akello, J., Mbute, F., Al Rwahnih, M., Chikoti, P.C., Chiona, M., Simulundu, E. and Alabi, O.J. **2020**. First Report of *Southern bean mosaic virus* infecting common bean in Zambia. ***Plant Disease*** **104(6)** Published Online **6 Feb 2020**. https://doi.org/10.1094/PDIS-11-19-2390-PDN
3. Wanjala, B., Ateka, E.M., **Miano, D.W.,** Low, J., Kreuze, J. **2020**. Storage root yield of sweetpotato as influenced by *Sweet potato leaf curl virus* and its interaction with *Sweet potato feathery mottle virus*, and *Sweet potato chlorotic stunt virus* in Kenya. ***Plant Disease*** **104(5):1477-1486**. https://doi.org/10.1094/PDIS-06-19-1196-RE
4. Ngôangôa, P.W., **Miano, D.W.,** Wagacha, J.M. and Kuria, P. **2019**. Identification and characterization of causative agents of cassava brown leafspot disease in cassava in Kenya. ***Journal of Applied Biology and Biotechnology*** **7: 1-7.** DOI: 10.7324/JABB.2019.70601

5. Waweru, B.W., Kilalo, D.C., **Miano, D.W.,** Kimenju, J.W. and Rukundo, P. **2019**. Diversity and economic importance of viral diseases of pepper (Capsicum spp.) in Eastern Africa. ***Journal of Applied Horticulture*** **21(1): 70-76.**
6. Nyakundi, R. K., **Miano D. W.,** Kilalo, D. and Mukunya, D. **2019**. Transmission of Maize lethal necrosis disease causing viruses from crop debris and soil. ***African Journal of Rural Development*** **4(3): 323-330**.
7. Mulenga, R.M., **Miano, D**., Al Rwahnih, M., Kaimoyo, E., Nzuve, F. and Alabi, O. **2019**. The use of highthroughput sequencing for detection and characterization of diverse viruses infecting common beans (*Phaseolus vulgaris* L.) in Zambia. ***Plant Health*** **2019**. https://apsnet.confex.com/apsnet/2019/meetingapp.cgi/Paper/13357
8. Mudde, B., **Miano, D. W**., Olubayo, F. M., Asea, G., Kilalo, D.C., Kwemoi, D. B., Adriko, J., Ssekiwoko, F.,Male, A. and Kiggundu, A. **2019**. Susceptibility of common weeds and cultivated crops in major maize growingagroecological zones of Uganda to viruses causing maize lethal necrosis disease. ***African Journal of Biological Sciences*** **1(4): 1-14.** doi: 10.334 72/AFJBS.1.4.2 019.1-14.
9. Kiambi, R.G., **Miano, D.W.,** Wagacha, J.M. and Wangai, A. **2019**. Effect of sequence of infection of maize with viruses causing Maize lethal necrosis on disease development. ***Journal of Natural Sciences Research*** **9(8): 44-50**. DOI: 10.7176/JNSR/9-4-05.
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conference at Pwani University on **6TH - 9TH December 2011**.

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122. **D. W. Miano**, D. R. LaBonte, C. A. Clark and C. McGregor **2008**. Use of real-time quantitative PCR in studying the response of sweetpotato to infection by causal agents of sweetpotato virus disease. Paper presented to the 1st All African Congress on Biotechnology. **22nd – 26th September 2008**. Grand Regency Hotel, Nairobi, Kenya. Pp 58

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Presentations at workshops

138. **D. W. Miano, 2018**. Introduction to synthetic biology and its applications. 2nd African Biosafety Leadership Summit. **17-18 August , 2018**, KSMS, Nairobi, Kenya

139. **D. W. Miano, 2018**. Established national governance and risk assessment frameworks for synthetic biology. UN Convention on Biological Diversity COP 14 Side Event on: Synthetic biology: Where are we now and where are we going? **21st November 2018**, Sharm El-Sheikh, Egypt. https://blogs.royalsociety.org/in-verba/2018/12/12/synthetic-biology-where-are-we-now-and-where-are-we-going/

140. **D. W. Miano**, **2017**. The current teaching and training environment in East Africa: Successes, challenges and opportunities. Synthetic Biology Workshop, **15th - 17th March, 2017.** Laico Regency Hotel, Nairobi.

Dissertations/theses authored

141. Replication of viruses responsible for Sweet potato virus disease in resistant and susceptible sweetpotato genotypes and identification of molecular markers linked to resistanceò. Ph.D. Thesis, Louisiana State University, USA, 2008.
142. Control of root-knot nematodes by use of different soil organic amendments. MSc. Thesis, University of Nairobi, Kenya, 1999

o. EXAMINERSHIP

Selected theses examined as a non-supervisor

External

1. Namu Joseph Samuel, 2018. Characterization of plant parasitic nematodes associated with rice and the post infection root-knot nematode elicited resistance responses.. Ph.D Thesis, Jomo Kenyatta University of Agriculture and Technology
2. Joseph Nsengimana, 2018. Prevalence of *Meloidogyne graminicola* in rice fields in Rwanda and effect of plant hormones in rice-nematode interactions. Ph.D Thesis, Jomo Kenyatta University of Agriculture and Technology
3. Esperance Munganyika, 2018. Relationship between cassava brown streak virus presence and disease development. Ph.D Thesis, Jomo Kenyatta University of Agriculture and Technology.
4. Cyprian Aloyce Rajabu, 2018. Using plant model systems to characterize geminiviruses that reduce crop productivity. Ph.D Thesis, Jomo Kenyatta University of Agriculture and Technology.
5. Lilian Auma Okiro, 2017. Detection of *Ralstonia solanacearum* in infected potato tubers by loop mediated isothermal amplification. MSc. Thesis, Jomo Kenyatta University of Agriculture and Technology.
6. Lilian Adiga Gerald, 2017. ôEvaluation of Improved Cassava Varieties for Resistance to Cassava Mosaic Disease and Cassava Brown Streak Disease in Ugandaõ MSc. degree thesis Makerere University, Kampala, Uganda

Internal

7. Magdalene Katungulu Nguli, 2018. Assessment of Essential Micronutrient Levels in Common Beans (*Phaseolus vulgaris*) in Muguga and Kyevaluki, Kenya. MSc. thesis, Institute of Nuclear Science, University of Nairobi.

8. Mwangi Margaret Wanjiru, 2018. Interactions between the fusarium wilt pathogen and root-knot nematodes in tomato and the potential of integrated strategies in management of the disease complex. Ph.D. in Crop Protection, University of Nairobi.
9. Margaret Njambi, 2017. Occurrence and Diversity of Plant Parasitic Nematodes of Roses and Their Management in Kenya. MSc. in Crop Protection, University of Nairobi

p. <u>FUNDED RESEARCH PROJECTS</u>

1. Mango Value Addition: An Opportunity to Improve Household Incomes for Small Scale Mango Farmers in Kenya. Research England GCRF QR Funding, 2019 -2020. £80,000. Co-Principal Investigator.
2. Identification of vectors involved in the transmission of *Maize chlorotic mottle virus* infecting maize in Eastern Africa. Funded by Biotechnology and Biological Sciences Research Council (BBSRC) through GCRF and CONNECTED Network (2018 ï 2019). £30,000. Co- Principal Investigator
3. Development of MSc. in Biosafety curriculum. Funded by International Centre for Genetic Engineering and Biotechnology (ICGEB) (2015 ï 2016). USD 9,100. Principal Investigator.
4. Virus Resistant plus nutritionally enhanced cassava for Africa (VIRCA Plus) Project. Funded by Bill and Melinda Gates Foundation, Monsanto Company (2016 ï 2021). USD 500,000. Country Principal Investigator, Kenya.
5. Integrated Management of Maize Lethal Necrosis in Eastern and Central Africa. Funded by ASARECA (2014 ï 2016). USD 1,995,100. Principal Investigator
6. Management and eradication of Maize Lethal Necrosis Disease (MLND) in Kenya. Funded by Kenya Agricultural Productivity and Agribusiness Program (KAPAP). 2013 ï 2014.
7. EAAPP/CN/2010/45. 2011. Assessment of Disease Epidemiology, Pest infestation on Cassava and Management Strategies in Kenya. KSh. 6,402,300 D. W. Miano, D. Mutisya, J. O. Ogecha, C. K. Kariuki, T. L. Munga, J. W. Kamau and Chris Omongo. Funded by EAAPP.
8. Enhancing Cassava productivity through host plant resistance breeding against Cassava Mosaic Disease and Cassava Brown Streak Disease. K. Sh. 3,600,000 Richard O. Oduor, Wilson M. Thagana Muriithi, William M. Muiru, Dr Mwangi Maina, Duncan Kirubi, Douglas W. Miano, Chris A. Omongo. Funded by EAAPP

9. Prime Award No. EDH-A-00-09-00010-00. Subaward No. 20353-KA. September 2009. $531,522.94. Virus Resistant Cassava for East Africa. C. Fauquet, D. Miano, S. T. Gichuki, P. Anderson, M. Halsey, T. Alicai, A. Bua. Funded by USAID.
10. Subaward No. 20367-KA. June 2011. $389,562.30. Phase II Virus Resistant Cassava (VIRCA) project. C. Fauquet, D. Miano, S. T. Gichuki, P. Anderson, M. Halsey, T. Alicai, A. Bua. Funded by Monsanto.
11. NSF Prposal No. 11100080. May 2011. $1,370,455. Determining the Pan-African crop virome: understanding virus diversity, distribution and evolution and their impacts on crop production in Africa. Zhangjun Fei, Jan Kreuze, Kai-Shu Ling, Martine Z-Tachin, Douglas Miano. Funded by Bill and Melinda Gates Foundation.
12. Studies on sweetpotato virus diseases in Kenya and South Africa. January 2011. KES 1,500,000. Odeny, D. A., Ateka, E. M., Miano, D. W. and Kandolo, D. Joint Research Grant under the Kenyan ï South African research partnership program bilateral agreement.
13. Detection and identification of begomoviruses infecting sweetpotato in Kenya. (KShs. 663,825). Funded by KAPAP. 2010 ï 2011. Investigators: D. W. Miano (Principal Investigator) and P. Ndolo.
14. Production of Jatropha carcass tissue culture plantslets for Biofuel in Kenya. (KShs. 1,620,710). Funded by KAPAP. Investigators: J. Mutisya, B. B. Bett, S. Gichuki, M. Mbogori, D. Miano, C. Macharia, P. Mwisa, P. Kimani. I was incharge of disease component.
15. Existing seed systems, demand and type of seed required for vegetatively propagated crops. (Kshs. 374,9350). Funded by KAPAP. 2010 ï 2011. Investigators: V. Gathaara, S. Makhoha, J. Ngugi, P. Mutua, D. Miano and D. Kilambya. Was incharge of disease component.
16. Studies on diversity and distribution of cassava brown streak virus in Kenya. (KShs. 800,000). Funded through IPDN project. 2009 - 2010. Investigators: D. W. Miano (Principal Investigator) and Z. M. Kinyua.

q. CONSULTANCIES

1. Drafting of the Policymakersô Booklet on Agricultural Biotechnology in Africa under the NASAC Leopoldina Project. Consultancy Assignment by Network of African Science Academies (NASAC), (2015)

2. Assessing Institutional Infrastructural Capacity to Detect, Monitor and Regulate GM Products in Kenya. Consultancy Assignment by Kenya Medical Research Institute. (2012)
3. Drafting of OECD consensus document describing the biology of cassava. Consultancy Assignment by Center for Environmental Risk Assessment (CERA). (2012)

r. MEMBERSHIP OF PROFESSIONAL BODIES

1. Member of CONNECTED - COmmunity NEtwork for africaN VEctor borne plant viruses (2017 to-date)
2. Member of Kenya National Academy of Sciences Sub-committee in Biotechnology (2012 ï to-date)
3. Member of American Phytopathological Society (2003 ï 2008)

s. COURSES TAUGHT

Diploma:

1. ACP 017: Application of Biotechnology in Crop Protection

Undergraduate:

ACP 101: General Microbiology

ACS 201: Principles of Crop Protection

ACP 302: Plant Disease Epidemiology and Seed Health

ACP 403: Post Harvest Pests and diseases

ACP 405: Plant Virology and Nematology

Masters:

1. ACP 602: Plant Virology and Nematology
2. APP 601: Principles of Plant Pathology
3. ASB 607: Seed Legislation and Accreditation

t. REFEREES

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