

## Curriculum Vitae

**Mathews Mito Dida**

**Nationality:** Kenyan

**Contact Address:** School of Agriculture and Food Security  
Maseno University, P.O. Box 333, Maseno, Kenya

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### **EDUCATION**

**2015- 2016:** University of California, Davis, USA. Awarded Plant Breeding Academy Certificate

**1994- 1998:** *University of East Anglia/John Innes Centre, UK:* Ph.D. Plant Genetics. **Topic of Research:** Genome studies and genetic mapping in finger millet.

**1992- 1993:** *University of Cambridge:* Masters of Philosophy in Plant Breeding.

**Research:** Analysis of gliadin alleles in wheat varieties.

**1990- 1992:** *University of Nairobi:* Masters of Science in Agronomy.

**1987- 1990:** *University of Nairobi:* Bachelor of Science in Agriculture (**First class honours**).

### **WORK EXPERIENCE**

**September 2018- Present:** Project Leader, Maseno University Seed Unit

**June 2017- Present:** Professor of Genetics and Plant Breeding, School of Agriculture and Food Security, Maseno University.

**June 2016- August 2018:** Dean School of Agriculture, Tom Mboya University College, Homa Bay (On secondment)

**March 2016- May 2016.** Acting Director, Research, Publications and Innovations, Maseno University

**Nov. 2011- 2015.** Appointed Coordinator of the Maseno University Science, Technology and Innovation Park.

**2010- June 2017:** Associate Professor, Department of Applied Plant Sciences, School of Agriculture and Food Security, Maseno University, Kenya

**June 2007- May 2010:** Senior Lecturer, Department of Botany and Horticulture, Maseno University, Kenya.

**July 2006- May 2007:** Lecturer Dept of Botany & Horticulture, Maseno University, Kenya.

**Jan. 2005- June 2006:** Visiting researcher, Department of Crop and Soil Sciences, University of Georgia, Athens, Georgia, USA.

*Research projects:* Worked with Prof Katrien Devos in developing finger millet microsatellite library, genetic diversity analysis of finger millet using microsatellites, Single Strand Conformation (SSCP) polymorphisms and performed Comparative mapping of blast resistance genes.

**Sept 2002 – 2004:** Lecturer, Department of Botany, Maseno University (Research on maize, finger millet breeding and genetics)

**2001-2002:** Plant Breeder, Lowland Technical and Agricultural Services (LAGROTECH), Kisumu, and a part-time Lecturer of General Genetics and plant biotechnology, Maseno University, Kenya.

**1998- 2000:** Postdoctoral researcher, Department of Plant and Soil Science, Texas Tech University, Lubbock, Texas. **Project:** Developed maize RFLP maps for QTL mapping of mite resistance genes.

**1993- 1994:** Lecturer, Bukura Agricultural College, Kenya.

## **PROFESSIONAL AND SPECIAL SKILLS**

I have good interpersonal skills and fluent in both written and spoken English.

Have extensive experience with molecular mapping techniques analyses. I also have the following special skills;

Well versed with most molecular biology techniques such as cloning.

Have working knowledge of most web-based bioinformatics genomic resources; GenBank, NCBI, Graingenes, Multiple sequence alignment and primer design programmes.

Able to use Excel, PowerPoint and other spread sheets for data management and presentation.

A practical plant breeder with over 17 years experience on maize and finger millet breeding.

## **ACHIEVEMENTS**

**2016:** Awarded University of California, Davis Plant Breeding Academy certificate

**2005:** Awarded Generation Challenge Program fellowship to study comparative genomics of blast resistance genes.

**1995:** Awarded an overseas research studentship by the Committee of Vice Chancellors of UK.

**1994:** Awarded a three-year studentship by the Sir Harley Stewart, Trust, Cambridge, UK.

**1992:** Cambridge ODA Scholarship.

**1992:** Admitted to the status of a Fellow of Cambridge Commonwealth Society.

**1989:** Dean's Award Certificate for outstanding performance in the Faculty of Agriculture, University of Nairobi.

## **PUBLICATIONS**

1. Dorothy A. Onyango, Fredrickson Entila, **Mathew M. Dida**, Abdelbagi M. Ismail and Khady N. Drame 2019. Mechanistic understanding of iron toxicity tolerance in contrasting rice varieties from Africa: 1. Morpho-physiological and biochemical responses. **Functional Plant Biology** <https://doi.org/10.1071/FP18129>
2. Fanuel Kawaka, Huxley Makonde, **Mathews Dida**, Peter Opala, Omwoyo Ombori, John Maingi, John Muoma. **2018**. Genetic diversity of symbiotic bacteria nodulating common bean (*Phaseolus vulgaris*) in western Kenya. PloSONE. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0207403>
3. Peng Q, Gimode D, Saha D, Schröder S, Chakraborty D, X. Wang, **M. M. Dida**, R L Malmberg and Devos KM. **2018** UGbS-Flex, a novel bioinformatics pipeline for imputation-free SNP discovery in polyploids without a reference genome: finger millet as a case study. **BMC Plant Biology** **18:117**
4. Pande D, Madzokere E, Hartnady P, Kraberger K, Hadfield J, Rosario K, Jäschke A, Monjane AL, Owor BE, **Dida MM**, Shepherd DN, Martin DP, Varsani A and Harkins GW (**2017**). The role of Kenya in the trans-African spread of maize streak virus strain A **Virus Research** **232: 69–76**
5. Gimode D, Odeny DA, de Villiers EP, Wanyonyi S, **Dida MM**, Mneney EM, Muchugi A, Machuka J, De Villiers SM. (2016) Identification of SNP and SSR Markers in Finger Millet Using Next Generation Sequencing Technologies **PLOS/ONE. DOI:10.1371/Joun Pone/0159437**
6. Mbogo, PO, **Dida, MM** and Owuor BO (2016) Effect of *Striga hermonthica* (Del.) Benth on yield and yield components of maize (*Zea mays* L.) hybrids in western Kenya **Journ Agric Research** **8 (8) :112-125**
7. Mbogo, P O, **Dida, MM** and Owuor B (2015). Generation Means Analysis for estimation of genetic parameters for *Striga hermonthica* Resistance in Maize (*Zea mays* L.) **Journ Agric Research** **7 (8): 43-55**

8. Olweny C, Jamosa J, **Dida MM**, Kimani W, Njuguna J, Githae D, Kiawa N, Yao L, Kosambo C, Sally C and P Okori (2014), High genetic diversity for improvement of sweet sorghum (*Sorghum bicolor* (L.) Moench) genotypes for sugar and allied products **Mol. Plant Breeding** **5**: 29-35
9. Kawaka F, **Dida MM**, Opala PA, Ombori O, Maingi J, Osoro N, Muthini M, Amoding A, Mukaminega **5**. D and J Muoma (2014). Symbiotic Efficiency of Native Rhizobia Nodulating Common Bean (*Phaseolus vulgaris* L.) in Soils of Western Kenya. **International Scholarly Research Notices** <http://dx.doi.org/10.1155/2014/258497>
10. Lule D, De Villiers, S., Tsehay, S., **Dida, M.**, Fetene, M., Kimani, W. and Tesfaye, K. (2014). Genetic diversity and eco-geographical distribution of *Eleusine* species collected from Ethiopia. **African Crop Sci Journ** **22** (1):45 – 57.
11. Olweny C, Abayo G, **Dida M** and Okori P (2013). Screening of sweet sorghum (*Sorghum bicolor* (L.) Moench)\_varieties for sugar and biomass production. **Sugar Tech** **15(3)**:258–262
12. Olweny C, Ong’ala J, **Dida M** and Okori P (2013). Farmers’ perception on sweet sorghum (*Sorghum bicolor* [L] Moench) and potential of its utilization in Kenya. **World Journ Agric Sciences Vol** **1(2)**: 065-075.
13. **Dida MM**. 2013. Evaluation of Kenyan Finger millet accessions for Blast disease and Striga weed. A paper presented at the 1<sup>st</sup> Bio-innovate Regional Scientific conference. 25<sup>th</sup>-27<sup>th</sup> Feb, 2013 at UNCC-ECA, Addis Ababa.
14. Illa A.O, Odhiambo G.D and **Dida M.M.** (2010). Increasing imazapyr-resistant maize yield by increasing plant density under natural *Striga hermonthica* infestation. **Agric. and Biol. Journ North America** **1(5)** :1061-1068

15. Kwach, J. K., Odhiambo, G. O., **Dida, M. M.**, Gichuki, S. T. (2010). Participatory consumer evaluation of twelve sweetpotato varieties in Kenya. **African Journ Biotech** **9**: 1600-1609
16. Gichimu B.M., Owuor B.O. and **M. M. Dida** (2009). Comparing the yield components of three most popular commercial watermelon cultivars in Kenya with one newly introduced cultivar and one landrace. **Journ Plant Breeding and Crop Science Vol. 1(4)**. 065-071
17. Muthoka, P.N., Hay, F.R., **Dida, M.M.**, Nyabundi, J.O., Probert, R.J. (2009), Moisture content and the longevity of seeds of six *Euphorbia* species in open storage. **Seed Sci. & Technol.**, **37**: 383-397
18. **Dida, M.**, Wanyera, N., Harrison Dunn, M.L., Bennetzen, J., Devos, K. 2008. Population Structure and Diversity in Finger Millet (*Eleusine coracana*) Germplasm. **Tropical Plant Biology** **1**: 131-141.
19. Kwach J.K., Gichuki S.T., **Dida M.M.** and G.O. Odhiambo (2008). Multi-location on-farm evaluation of sweet potato varieties for commercial and domestic use in South western Kenya. **E. Afr. Agric. For. J.** **74(2)** 127-138
20. Gichimu B. M., B. O. Owuor and **M. M. Dida** 2008. Agronomic performance of three most popular commercial watermelon cultivars in Kenya as compared to one newly introduced cultivar and one local landrace grown on dystric nitisols under sub- humid tropical conditions. **Journ. Agric. & Biol. Sc.** Vol. 3 No, 5&6
21. Gichimu B. M., B. O. Owuor and **M. M. Dida** 2008. Assessment of four commercial watermelon cultivars and one local landrace for their response to naturally occurring diseases pests and non-pathogenic disorders in sub-humid tropical conditions. **Journ Agric. & Biol. Sc.** Vol. 3, No.5&6

22. **Dida M.M.**, Srinivasachary, Ramakrisna S, Bennetzen JL, Gale MD, Devos KM (2007) The Genetic linkage map of finger millet, *Eleusine coracana*. **Theor Appl Genet.** **114**: 321-332
23. Srinivasachary, **Dida MM**, Gale MD, Devos KM. (2007) Comparative analyses reveal high levels of conserved colinearity between the finger millet and rice genomes. **Theor Appl Genet.** **115**: 489-499
24. Contributed a book chapter on Vol.I of Genome Mapping and Molecular Breeding in Plants (Chap.10. finger millet). CJ Kole (ed), Springer-Verlag, Heidelberg, Germany 2006. ISBN 3-540-34031-9
25. **Dida MM**, Gale MD, Devos KM (2001) Exploitation of grass comparative maps in the analysis of finger millet. In: Tefera H, Belay G, Sorrells ME (eds) Narrowing the rift; Tef research and development. Ethiopian Agricultural Research Organization, pp 267-274
26. **Dida MM** (1998) Genome studies in finger millet, PhD thesis, University of East Anglia, UK.

### **POSTERS AND CONFERENCES ATTENDED**

1. **Dida Mathews**, Katrien M Devos and Michael D. Gale (1997). Mapping the finger millet (*Eleusine coracana*) genome. Poster 329, *Plant & Animal Genome V Conference*, Town and Country Hotel, San Diego, CA, January 12-16, 1997.
2. **Mathews M Dida**, Katrien M Devos, Michael D Gale (1998). Comparative genetic maps of finger millet (*E. coracana*) and rice (*Oryza sativa*). Poster 347, *Plant & Animal Genome VI conference*, Town and Country Hotel, San Diego, CA, January 18-22, 1998.

3. Attended *Plant & Animal Genome XIII conference*, Town and Country Hotel, San Diego, CA, January 10-15, 2005.
4. Attended and Presented a Poster at Plant and Animal Genome XIV conference, Town and Country Hotel, San Diego, CA, January 13-18, 2006.
5. **Dida MM**, ME Sorrells, Devos KM. 2006. Rice-finger millet comparative mapping of blast resistance genes. A poster presented at the Generation Challenge Program Annual research meeting at Caesar Business Hotel, Sao Paulo, Brazil, Sept. 12-16<sup>th</sup>, 2006.
6. Attended 6<sup>th</sup> Conference of the Global Consortium of Higher Education and Research for Agriculture held on 23<sup>rd</sup>-27<sup>th</sup> November 2009 at Kenyatta International Conference Centre, Nairobi, Kenya.

### **FUNDED PROJECTS**

1. Partnership to deliver to market Striga weed resistant maize and finger millet varieties in Kenya and Uganda, **January 2018- December 2020. SIDA**, Through BioInnovate, ICIPE, Amount in **USD 190,000**
2. Population genetics of grey leaf spot disease of maize in South Africa and Kenya, July **2017- July 2019, NRF Kenya & NRF South Africa, KSh, 2,992,000**
3. **BREAD ABRDC**: Development of Essential Genetic and genomic Resources for finger millet, July 2016- June 2020. **American NSF. Amount USD 64,144**
4. **PEARL2**. Unraveling the molecular genetics of finger millet blast disease and the existing resistance for the development of high yielding resilient varieties. **Bill and Melinda Gates Foundation. 2015-2019. Amount USD 32,725**



5. Improving finger millet through exploitation of wild finger millet Germplasm (*Eleusine* Spp.). **Global Crop Diversity Trust. 2015-2020. Amount USD 85,873**
6. Exploitation of *Eleusine kigeziensis* to enhance adaptation to climate change in cultivated finger millet. **ICRISAT. 2015-2016. Amount USD 18,700**
7. Enhancing capacity of Maseno University Seed Unit to deliver to market resilient new maize varieties in Western Kenya. **USAID** funded through **Kenya Feed The Future Innovation Engine, Land O' Lakes, Kenya. 2014-16. Amount in KSh 4.87 million**
8. Delivering New Sorghum and Finger Millet Innovations for Food Security and Improving Livelihoods in Eastern Africa Project funded by SIDA through BioInnovate Project at ILRI, Nairobi, 2011-2014. **Amount 53,000 USD**
9. Characterization, genetic enhancement and Revitalization of finger millet in western Kenya. **FAO- Benefit-Sharing Fund of the International Treaty., 2009-2011, Total 50,000 US Dollars**
10. Technologies to Improve Maize productivity in nutrient depleted acid soils of western Kenya. 2009 - 2010. **Kenya National Council for Science and Technology, Ksh 1.7 million.**
11. Diversity of mastreviruses across Africa, the Middle East and southern Asia. *TWAS funded. 2010. Amount 30,000 Stirling Pounds*
12. Characterization of genetic diversity in finger millet (*Eleusine coracana*). USAID funded pilot project, 2003. **Amount 10,000 US Dollars**
13. From rice to finger millet: comparative mapping of blast resistance genes. Generation Challenge Program fellowship funded project, Nov. 2005-June 2006. **Total 25,000 USD**

## **CURRENT RESEARCH**

Breeding of maize for general adaptation to humid mid altitudes and highlands of western Kenya, and breeding for *Striga hermonthica* resistance/tolerance.

I am also interested in breeding of finger millet for Striga and blast disease resistance.

## **NEW CROP VARIETIES DEVELOPED**

- I have developed 6 maize hybrid varieties that are high yielding and are adapted to western Kenya mid altitudes (1200- 1700m) above sea level. Two of these new maize hybrids (Maseno EH10 and Maseno EH11) passed national variety trials conducted between 2009 and 2012 and were released for commercialization in Kenya in 2013. Other varieties Maseno EH12 and EH14 have genetic tolerance of Striga weed and were released in June 2016.

Other new variety, Maseno Sukari is currently under national DUS trials in Kenya.

- I have also developed an early maturing and drought tolerant finger millet variety (Maseno 60D). Maseno 60D matures in 80 days from planting much earlier than all Kenyan varieties and was released in June 2016.
- In addition, I have developed 2 cassava hybrids with resistance to African Cassava Mosaic Virus and are sweet (low cyanide).

## **STUDENTS SUPERVISED**

### **PhD Students**

1. Peter Mbogo- Breeding and screening of maize for *Striga hermonthica* Resistance. Graduated at Maseno University in **2017**.
2. Caleb Olweny. Research on sweet sorghum. Graduated at Makerere University, Uganda in **2016**
3. Mr Daniel Pande. Genetic variability and virulence of maize streak virus graduated with a **PhD** of Maseno University **2014**.
4. Dr Patrick Muthoka. **Title:** Comparative longevity studies in selected succulent genera: *Euphorbia*, *Kalanchoe* and *Edithcolia*. **PhD thesis, 2008**, Maseno University.
5. Fanuel Kawaka. **Title:** Effects of organic and inorganic nitrogen sources and native Rhizobial strains on nodulation and yield of common Bean in western Kenya. **PhD**, graduated in **2016**.
6. Dorothy Akinyi. **Title:** Physiological and molecular mechanisms of iron-toxicity tolerance in rice and implication for breeding. **Research** completed at Africa Rice Centre, Dar Es Salam.

### **MSc Students**

7. Bernard G Mukiri. **Title:** Genetic variation and agronomic performance of some wild and cultivated watermelon (*Citrullus Sp.*) accessions in Kenya. **Msc. Thesis, 2008**, Maseno University
8. Johnstone K Kwach. **Title:** Multilocational testing and farmer participatory evaluation of sweet potato [*Ipomoea batatas* (L.) Lam.] varieties in Southwest Kenya for commercial and domestic use. **Msc. Thesis, 2008**, Maseno University
9. Peter Mbogo, Effects of gray leaf spot (*Cercospora zeamaydis* L) on maize and genetics of resistance **Msc. Thesis, 2010**, Maseno University

10. Absalom Illa, Effect of Plant density on IR Resistant Maize under bean Intercrop. **Msc. Thesis, 2010**, Maseno University

### **OTHER RESPONSIBILITIES**

I am a member of the Kenya Science, Technology and Innovation (KESTI) Awards Committee/Jury. **Appointed in October 2015.**

I participated in proposal review for National Commission for Science and Technology and Innovation (NACOSTI) and National Research Fund, Kenya in 2013-2018

### **REFEREES**

1. Prof. Prof Harun Ogindo,  
Chairman, Department of Applied Plant Sciences, Maseno University  
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2. Prof. Gerorge Odhiambo  
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