MASENO UNIVERSITY
SCHOOL OF AGRICULTURE AND FOOD SECURITY
DEPARTMENT OF SOIL SCIENCE

FACULTY PROFILE

Title: **Professor**

Full Name: **Dalmas O. Sigunga**
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Qualifications: **BSc. Agric., MSc. Agron., PhD Soil Science, PGD Post-secondary Educ.**

On-going research:

- Evaluating the Productivity and Efficacy of integrated aquaculture-horticulture farming using roof catchment water
- Effectiveness of phosphate rock on soil reaction and phosphorus availability in acid ferralsols.
- Comparative studies on soil properties of fallow and successive sugar cane cropping systems in western Kenya

Publications:

Refereed publications:

1. Sigunga, D.O., Kimura M., Hoshino, M., Asanuma, S. and Onyango, J.C. (2013) Root-fusion characteristic of Eucalyptus trees block gully development. *Journal of Environmental Protection,* 4(9): 877 – 880.

2. Nina, D.O. and Sigunga, D.O. (2012)
Effects of drying method, storage period and carbon:nitrogen ratio on inorganic nitrogen contents of Vertisols. *African Journal of Environmental Science and Technology,* 6(12): 476 – 482.

3. Owino, C.O. and Sigunga, D.O. (2012).
Effects of rainfall pattern and fertilizer nitrogen on nitrogen loss in bypass flow in Vertisols under tropical environments. *Journal of Environmental Science and Water Resources,* 1(9): 207 – 215.

4. Sigunga, D.O., Hoshino, M., Onyango, J.C., Asanuma, S. and Kimura M. (2011)
Pedological perspective of gully erosion sites within Kendu escarpment-Sondu Miriu region, west Kenya. *African Journal of Environmental Science and Technology*, 5(12):1050-1059.

5. Sigunga, D.O. and Wandahwa, P. (2011)
Land and soil resources and their management for sustainable agricultural production in Kenya: current position and future challenges. *Egerton Journal of Science and Technology*, 11: 66-86.

6. Ogendo, R.O., Isutsa, D.K., and Sigunga, D.O. (2008). Integration of farmyard manure and plant population density effects on soil characteristics and productivity of mulched strawberry (*Fragaria ananassa*) in a Tropical climate. *The African Journal of Horticultural Sciences*, 1: 100-115.

7. Sigunga, D.O., Janssen, B.H., and Oenema, O. (2008).

Effects of fertilizer nitrogen on short-term nitrogen loss in bypass flow in a Vertisol. *Commun.Soil Sci. Plant Anal. 39(17): 2534 – 2549.*

8. Wasonga, C.J., Sigunga, D.O., and Musandu, A.O. (2008).
Phosphorus requirement by maize varieties in different soil types of western Kenya. *African Crop Science Journal*, 16(2): 161 -173.

9. Rota, J. A., Wandahwa, P. and Sigunga, D.O. (2006).
Land Evaluation for Soybean (*Glycine max* L. Merrill) production based on kriging soil and Climate parameters for the Kakamega District, Kenya. *Journal of Agronomy*, 5(1): 142-250

10. Sigunga, D.O. (2003).
Potential Denitrification: Concept and conditions of its measurement. *Commun. Soil Sci. PlantAnal.*, 34(17 & 18): 2405-2418

11. Sigunga, D.O., Janssen, B.H., and Oenema, O. (2002).
Denitrification risks in relation to fertilizer nitrogen losses from Vertisols and Phaoezems. *Commun. Soil Sci. Plant Anal*., 33(3 & 4): 561-578.

12. Sigunga, D.O., Janssen, B.H., and Oenema, O. (2002).
Ammonia volatilization from Vertisols. *European J. Soil Sci*., 53: 195-202.

13. Sigunga, D.O., Janssen, B.H. & Oenema, O. (2002).
Effects of improved drainage and nitrogen source on yields, nutrient uptake, and utilization efficiencies by maize (*Zea mays* L.) on Vertisols in sub-humid environments. *Nutrient Cycling in Agroecosystems*, 62: 263-275.

14. Sigunga, D.O. (1993).
Effects of nitrogen sources on growth and nutrient uptake by wheat, *Agropyron*, and their Hybrid grown in variable- and constant-pH culture solutions. *Discovery and Innovation* ,5(2):167-171.

15. McColl, J.G., Waldren, R.P., Wafula, N.J. , and Sigunga D.O. (1991).
Aluminum effects on six wheat cultivars in Kenya soils. *Commun. Soil Sci. and Plant Anal.*, 22(15&16): 1701 -1719.

16. Sigunga, D.O., Moritsugu, M. & Kawasaki, T. (1986).
Effects of nutrient concentration in the medium on the growth and mineral uptake in wheat, *Agropyron*, and their hybrids. *Kenya Journal of Science and Techn. Series B.*, 7 (i):4-6.

17. Sigunga, D.O. and Ngugi, D.N. (1985)
The growth and yield of solanum potatoes in Kakamega District of Kenya. *Kenya Journal of Science and Technology Series B.*, 6(2): 93 - 105.

18. Muramatsu, M. and Sigunga, D.O., (1983).
Amphiploid seed obtained by colchicine treatment of F_1 hybrid between *Triticum spelta* and *Agropyron intermedium. Scientific Report of the Faculty of Agriculture*, Okayama University, 61: 1 - 3.

Reports and proceedings

1. Sigunga, D.O., M. Hoshino, J.C. Onyango, S. Asanuma, and M. Kimura (2012).

Clarification of soil erosion mechanisms based on soil chemical and physical characteristics in the gully-eroded region of western Kenya.

Paper presented at the Environment Conservation and local Culture in the region suffering from soil erosion in western Kenya Workshop held at Nagoya University, Japan on 6th – 9th March, 2012.

2. Sigunga, D.O., M. Hoshino, J.C. Onyango, S. Asanuma, and M. Kimura (2011).

Soil pedological properties of gully eroded sites and possible control measures in western Kenya.

Paper presented at the 10th African Crop Science Society Conference held at Joachim Chisano International Conference Center Maputo, Mozambique on 10th - 13th Oct 2011.

3. Sigunga, D.O. and Wandahwa, P. (2010).
Land and soil resources and their management for sustainable agricultural production in Kenya: Current position and future challenges. Proceedings of the 5th Research Week & International Conference held at Egerton University, Kenya, 22nd – 24th September, 2010.

4. Isutsa, D.K., Aguyo, J.N., Sigunga, D.O., Odongo, T., and Ogendo, R.O. (2007).
Effect of integrated nutrient management and plant density on productivity of strawberry (*Fragaria x ananassa* Duch.). In: DK Isutsa (ed). Proc Second Res Week held 16th to 20th July 2007 at the ARC, Egerton University, Kenya. Pp.44 – 55.

5. Wandahwa, P., Rota, J.A., and Sigunga, D.O. (2006).
Using geographic information systems and global positioning system to map soil characteristics for land evaluation. Proceedings of the workshop for alumni of the MSc programmes in Soil Science, Ghent University, Belgian, September 3 – 9, 2006. pp. 184 – 193.

6. Ochuodho, J.O., Sigunga, D.O., and Songa, W.A. (2001).
Seed regulations and seed provision options with particular reference to food cereal and legume grains in Kenya. In: *Linking Seed Producers and Consumers: diagnosing Constraints in Institutional Performance*. ODI/ICRISAT. Pp. 63-73.

7. Sigunga, D.O. (1998).
Soil and Water Resources: Their conservation, management, and constraints to their utilization for sustainable development in Kenya. In. J.J. Baidu-Forson (ed). Africa's Natural Resources Conservation and Management Surveys. Summary Proceedings of the United Nations University Institute for Natural Resources in Africa Regional Workshop, Accra, Ghana, March 1998. Pp. 87-89.

8. Sigunga, D.O., Ochuodho, J.O. & Van der Burge, W.J. (eds.) (1998).
Proceedings of the Workshop on Seed Quality Management, Egerton University, Kenya. February 17 - 20, 1998.

9. Sigunga, D.O. and Janssen, B.H. (1996).
Processes and factors affecting fertilizer nitrogen use efficiency in Vertisols in Kenya. *Transact. of the 9th Nitrogen Workshop*, Technische Universität, Braunschweig, Germany. Sept. 1996. pp. 109-112

Theses:

Sigunga, DO (1983). Effects of fertilizer nitrogen on growth and yield of solum potatoes (*Solanum tuberosum*) in western Kenya MSc dissertation, Nairobi, Kenya.

Sigunga DO (1997). Nitrogen use efficiency and nutrient uptake by maize (*Zea mays L.*) in Vertisols in Kenya .PhD thesis, Wangeningen, the Netherlands.