



UNIVERSITY OF NAIROBI

Faculty of Agriculture

Department of Land Resource Management and Agricultural Technology

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Call for applications

MSc scholarships: RUFORUM-GRA Graduate Research Grants

Reference: RU/GRA-GRG /2023

Assessing Soil Organic Carbon Stocks and Fluxes Under Holistic Planned and Traditional Grazing Management Systems in Rangelands of Kenya (SMARTGRAZE)

SMARTGRAZE is funded through the RUFORUM GRA Graduate Research Grants. The project seeks to investigate the impacts of holistic planned grazing (HPG) on carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄) emissions, soil organic carbon (SOC) and soil properties, biomass production, diversity and nutritional quality, and livestock forage preferences in a semi-arid rangeland of Kajiado County, Kenya. Data will be collected from plots under HPG system and traditional grazing during the wet and dry seasons. GHG emissions will be measured using static chambers, while vegetation and soil will be sampled and analysed to determine SOC, herbage biomass and nutritional quality. GIS will be used in the integration of biomass carbon, soil carbon and carbon stock mapping. Roth-C carbon model will be used to model soil carbon dynamics. The findings provide evidence on the pros and cons of the HPG system as a climate change mitigation and adaptation strategy in the semi-arid rangelands.

The following MSc topics are on offer:

- 1. Determination of carbon stock, selected soil properties, CO₂, N₂O and CH₄ emissions under holistic planned grazing and traditional grazing systems in the semi-arid rangelands of Kajiado County of Kenya*
- 2. Analysis of the effects of holistic planned grazing management on herbaceous biomass production, cover, diversity, nutritional quality and livestock forage selectivity and preferences in the rangelands of Kajiado*

Contact: Prof. Richard Onwonga, Department of Land Resource Management & Agricultural Technology, email: richard.onwonga@uonbi.ac.ke

The Scholarship will cover MSc. Tuition fees, monthly stipend for two years and research costs.

Qualifications of the applicants:

1. Excellent BSc. degree (1st class or upper 2nd class honors) in natural resource management, range management, Agroecosystem and environment management, human, agricultural sciences, animal production, or related fields, from recognized/accredited University.
2. In-depth knowledge of arid and semi-arid rangeland ecosystems and extensive livestock production systems
3. Fluency in spoken and written English
4. Teamwork orientation and good communication skills.

Application process:

Please chose the research topic of interest and send your application to the undersigned. Application should: Letter of motivation related to the research topic you have chosen (1 page), Curriculum vitae; Summary of the undergraduate special project/field attachment report topic (1 page); Copy of relevant certificates & transcripts; Names and contact details of 2 referees. Please submit these documents by email in a single PDF file, best before 10.11.2023.

Note: Successful applicants shall be required to immediately apply and join MSc. Dryland Resource Management and (or) MSc. Land Water Management offered at the Department of Land Resource & Agricultural Technology (LARMAT), UoN.

Prof. Richard Onwonga, SMARTGraze Project Principal Investigator, & Chairman LARMAT, UoN (Email: richard.onwonga@uonbi.ac.ke; Tel. +254725828254