Oppenheimer Generations Research and Conservation (OGRC)

Call for Applications PhD Programme on Rangeland Sciences

We are pleased to announce that applications are open for an Oppenheimer Generations Research and Conservation (OGRC) PhD scholarship in Rangeland Science focusing on the use of multipurpose trees (MPTs) in climate challenged environments. The study presents an opportunity to achieve increased and sustainable cattle productivity for semi-arid farmers. It will evaluate the establishment, growth under different environments, disease tolerance, nutritional quality, regeneration potential, feeding potential, conservation, and methaneogenesis effects of multipurpose trees. The study will be based at Shangani Holistic ranch in Matabeleland South, Zimbabwe. Shangani ranch is holistically managed and integrates cattle and wildlife production system. This makes the ranch best suited for research and the development of technologies for sustainable livestock production within climate-challenged environments in Zimbabwe. Insufficient and low-quality feed is a major problem affecting the ranch and surrounding pastoral communities. The prominence of multipurpose trees (MPTs) in commercial and smallholder production systems varies hugely, and the extent of their cultivation in climate-challenged beef production environments is lower than would be expected given their potential to alleviate the current shortcoming.

Background

Some of the problems confronting livestock farmers in climate-challenged livestock production environments in Zimbabwe include increased greenhouse gas emissions, water pollution and depletion, land degradation and deforestation, nutrient mining and erosion, biodiversity loss, seasonal fluctuation in the quantity and quality of forages, seasonal animal weight losses, and low animal productivity. Animal nutrition can be viewed as a beginning point for tackling the significant issues that face ruminant-livestock producers. As a result, high-quality and digestible forages with low non-renewable resource inputs (such as water, fuel, arable land, fertilizers), low greenhouse gas emissions during cultivation and feeding, and high resistance to biotic and abiotic stressors, including adaptation to potential climate change, could be a solution to these critical problems. Protein is the most limiting nutrient in semi-arid rangeland livestock production systems, especially during the long dry season. The expense of bought-in feed supplements for smallholder farmers and even in the commercial sector, is no longer attractive. In semi-arid areas, multipurpose trees (MPTs) have the potential to be used as a protein supplement for ruminants. However, research on MPTs in semi-arid environments has largely been exploratory rather than experimental, with the goal of better understanding their potential use as livestock feed. This call is therefore aimed at addressing this shortcoming.

Requirements

The ideal candidate should have at least an MSc and BSc degrees in Animal Sciences, rangeland sciences, Animal nutrition and any related field plus:

- Experience in conducting field studies in communities
- Laboratory experience
- Demonstrated skills in GIS & Remote sensing and quantitative data modelling in R, Python, Stata or any other modern statistical software
- Demonstrated strong aptitude for scientific research and critical thinking
- Possess extensive skills and knowledge in rangeland sciences, ecosystem dynamics and experimental design
- Evidence and experience in publishing in peer-reviewed scientific journals

Implementation

1. It is conceived that the study of evaluating the MPTs for livestock feeding will involve: Establishment, growth, accumulation of nutrients, and biomass of selected MPTs
2. To investigate the disease tolerance, drought tolerance, and browsing pressure resistance of selected MPTs under climate challenged beef production environments in Zimbabwe
3. To investigate the nutritional and antinutritional values of selected MPTs
4. To investigate the effects of MPTs-based diets on the growth and reproductive performance of beef cattle under climate challenged beef production environments in Zimbabwe
5. To determine the influence of ensiling and haymaking on the chemical composition and fermentation characteristics of selected multipurpose trees.
6. To estimate the costs and benefits of feeding beef cattle with multipurpose tree-based diets
7. To investigate the effects of supplementing beef cattle with multipurpose trees on dietary protein use, ruminal fermentation, and enteric methane emissions under climate challenged beef production environments in Zimbabwe

Duration

The envisaged study is expected to last for four (4) years.

To apply:

Interested candidates are encouraged to send:

1. A motivation application letter explaining why you are suitable for the position,
2. Current CV
3. Certified copies of certificates and transcripts
4. Three reference letters

Send all your documents as a single pdf file to The Registrar, Africa University, email address: registrar@africau.edu

Phone No. +263 8688002151

Please note that this scholarship is available to nationals of an African country and special preference will be given to Zimbabwean nationals. The PhD student is expected to register with the College of Health, Agriculture and Natural Resources at Africa University, Zimbabwe, with co-supervision from Dr Linde du Toit from the Department of Animal Science at the University of Pretoria, South Africa.

Please submit your application by 31st October 2023