
**THE NELSON MANDELA
AFRICAN INSTITUTION OF SCIENCE AND TECHNOLOGY
(NM-AIST)**

VIVA VOCE ANNOUNCEMENT

1st November 2021

FROM: Dean LiSBE

TO: The Public

**Ref: VIVA VOCE EXAMINATION OF A PhD CANDIDATE, ELMUGHEIRA
MOCKARRAM IBRAHIM MOHAMMED (REG. NO. P237/SUD17)**

Please, refer to the heading above,

The School of **Life Sciences and Bioengineering (LiSBE)** at the NM-AIST, wishes to announce the VIVA-VOCE Examination of **MR. ELMUGHEIRA MOCKARRAM IBRAHIM MOHAMMED**, a PhD candidate in **Life Sciences**, specialized in **Biodiversity and Ecosystems Management**.

The VIVA VOCE examination is scheduled on **Monday, 15th November 2021 in Room B202 from 09:00 am to 12:00 pm.**


Research Title: Effects of Livestock Browsing and Illegal Harvesting on Natural Regeneration and Ecology of *Balanites aegyptiaca* in Dinder Biosphere Reserve, Sudan

ABSTRACT

Livestock browsing, and illegal harvesting often influence natural woodlands, rangelands, and biosphere reserves. However, the resulting tree species diversity, composition, and population structure have rarely been quantified. The study explored the status of tree diversity, composition, and the growth of *Balanites aegyptiaca*, across 100 sample plots of 25 m x 40 m at disturbed and non-disturbed sites in Dinder Biosphere Reserve, Sudan (DBR). The dendrometric parameters of *B. aegyptiaca*, fruit production, and the soil-chemical properties were also assessed in the same sample plots. Moreover, to examine the response of *B. aegyptiaca* seedlings and saplings to livestock browsing, the study used a stratified sampling design with four sites been browsed by goats, cattle, camels, and control, respectively. The study data was collected over two years in the period from January 2019 to January 2021. Results showed that non-disturbed sites had tree diversity double that of disturbed ones ($P < 0.001$, $T = 32.6$), and their seedlings and saplings constituted $> 70\%$ of the entire population ($F_{2,48} = 116.4$, $P = 0.034$; $F_{2,48}$

= 163.2, $P = 0.021$, respectively). The soil nitrogen and phosphorus contents beneath trees in non-disturbed site were almost double that of those in the disturbed site ($F_{1, 196} = 68.1, P < 0.001$; $F_{1, 196} = 97.9, P < 0.001$) while sodium and electrical conductivity were by about 50% lower ($F_{1, 196} = 535.8, P < 0.001$; $F_{1, 196} = 16.1, P < 0.001$). Mortalities of seedlings under goat browsing were four times higher than that under camel browsing and control and twice as high than under cattle browsing ($F_{3, 196} = 100.39, P < 0.001$). Sapling mortality was three times higher under goat browsing compared to cattle and control ($F_{3, 196} = 73.4, P < 0.001$). The study found that seedlings recover better than saplings, and, unexpectedly, goat browsing severely affected the natural regeneration of *B. aegyptiaca* in DBR. The study concludes that illegal harvesting in DBR severely reduced tree structure and recruitment parameters of *B. aegyptiaca*, which might also impact soil fertility. Intensive monitoring and awareness-raising programs are urgently needed to conserve this vulnerable tree species.

You are all welcome!!



Dr. Francis Moyo
For: Dean - LiSBE