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

21st April 2021

VIVA VOCE ANNOUNCEMENT

FROM: Dean LiSBE

TO: The Public

Ref: **VIVA VOCE EXAMINATION OF A PhD CANDIDATE, MR. ELIAKIRA NASSARY (REG. NO. P. 122/T.16)**

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. Eliakira Nassary,** a PhD candidate in **Life Sciences**, specialized in **Sustainable Agriculture.**

The VIVA VOCE examination is scheduled on **Friday, 7th May 2021 in Room B202 from 01:00 pm to 04:00 pm.**

Research Title: Assessing Options for the Intensification of Common Bean Cultivation on Smallholder Farms in the Northern Highlands of Tanzania

ABSTRACT

Complementarities of common bean (*Phaseolus vulgaris* L.) with non-legume food crops and their significances to the agricultural systems are underexploited. Based on the description of this study, eight options were assessed for the sustainable intensification of common bean cultivation (through manipulations of intercropping and rotation) against the monocultures of maize (*Zea mays* L.), and the improved and local varieties of common bean in the northern highlands of Tanzania. The factors assessed were the cropping seasons/years (S) (2015 to 2017), agro-ecological zones (A) above sea level (lower 843 m, middle 1051 m, upper 1743 m), cropping systems (C) (sole, intercrop, rotation), and bean varieties (V) (improved *Lyamungu 90* and local *Mkanamna*) and their interactions. Results indicated that S, A, C, and S×A, S×C, S×A×C were significant and bean grain yields increased in intercrops ranging from 1.5 to 2.9 t ha^{-1} with land equivalent ratio (LER) of 1.58. Intercropping over five cropping seasons indicated that with S×V

grain yields increased from 0.2 to 3.5 t ha^{-1} in bean and from 2.3 to 2.6 t ha^{-1} in maize with LERs of 1.48 and 1.55. In rotations, higher bean grain yields were attributed to S (3.3 t ha^{-1}), C (3.4 t ha^{-1}), and V (2.7 t ha^{-1}) and for maize were in C (2.9 t ha^{-1}) and S (2.6 t ha^{-1}). In conclusion, out of eight assessed options, this study found two main useful options for improving food security on smallholder farms in the northern highlands of Tanzania. One of the important options was the continuous cultivation of the improved and/or local varieties of common bean in intercrops with the maize throughout two rainy seasons of the year (long and short). Another option was the cultivation of the improved and/or local varieties of common bean intercropped with maize in the long rainy season and rotating of these intercrops with the maize cultivated in the short rainy seasons. Importantly, the improved bean variety *Lyamungu 90* was heavier than the local bean variety *Mkanamna*, which provided additional factors to be considered to improve income since weight is the acceptable standard in the global market.

You are all welcome!!

Dr. Ernest Mbega
Ag. Dean - LiSBE