

INVITATION TO A Ph.D. RESEARCH RESULT BASED SEMINAR PRESENTATION

DATE: 11-1-2023, TIME 10:00 AM, VENUE: Crop science laboratory

TITLE: AGROECOLOGICAL PRACTICES FOR INCREASED PRODUCTIVITY OF CASSAVA-MAIZE BASED SYSTEMS: A CASE STUDY OF MVOMERO AND MASASI DISTRICTS IN TANZANIA

CANDIDATE: JOHN CONSTANTINE

Supervisors: Prof. K.P. Sibuga (DCSH-SUA)
Dr. M. J. Shitindi (DSGS- SUA)
Dr. A. Hilbeck (Zurich- Switzerland)

ABSTRACT: Field experiments were conducted for two seasons (2019/20 and 2020/21) in Mvomero and Masasi Districts to study the effects of different rates of compost (CP) and Farmyard manure (FYM) on selected soil quality attributes. Treatments comprised of CP and FYM applied on maize and cassava plots separately at the rates of 0 t ha⁻¹ (Control), 2.5 t ha⁻¹, 5 t ha⁻¹ and 7.5 t ha⁻¹. For each crop, the treatments were arranged in a RCBD in three replications. Results indicated that, at Masasi site, the highest significant ($p \leq 0.05$) β -glucosidase activity (18.03 $\mu\text{gpNPg}^{-1}\text{dwh}^{-1}$) was recorded at the highest FYM treated maize. At Mvomero, the highest significant β -glucosidase activity (15.67 $\mu\text{gpNPg}^{-1}\text{dwh}^{-1}$) was recorded in the FYM treated cassava plots at a rate of 7.5 t ha⁻¹ in 2019/20. At Masasi, the highest significant phosphatase activity (40.41 $\mu\text{g pNPg}^{-1}\text{dwh}^{-1}$) was recorded in the FYM treated maize plots at a rate of 7.5 t ha⁻¹ in 2019/20. At Mvomero, the highest Phosphatase activity (24.27 $\mu\text{g pNPg}^{-1}\text{dwh}^{-1}$) was achieved in the maize plots treated with CP at application rate of 7.5 t ha⁻¹. Application of either CP or FYM at the rate of 5 t ha⁻¹ and 7.5 t ha⁻¹ did not differ significantly in terms of β -glucosidase and phosphatase activities as well as accumulation of soil organic carbon and phosphorous. Hence, application of 5 t ha⁻¹ of either compost or FYM is enough to give the desired activities of β -glucosidase and phosphatase for maintaining soil health and hence improved crop production.