ABSTRACT

TITLE: Impact of mineral fertilizer on the yield of groundnut and soil available Phosphorus in the Karaga district of Ghana.

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Field experiments were carried out to ascertain the impact of mineral fertilizer application on the Yield of groundnut and the soil available Phosphorus at Nyong Guma 2, Pishegu and Cheshegu. Mineral nutrients applied were Phosphorus(P), Potassium(K), Magnesium(Mg), Sulphur(S), Zinc(Zn) and Boron(B).

Triple superphosphate(TSP) fertilizer was used for P, Potassium chloride(KCL) for K, Zinc sulphate monohydrate(H_2O_5SZn) for Z, Magnesium sulphate (MgSO4) for Mg and S and finally Borax for B. The experiments were laid in a Randomized Complete Block Design(RCBD) with six treatments. Response parameters measured were shoot biomass at 50% flowering, grain yield, agronomic efficiency and value cost ratio. Buffer rows were created to avoid over-spill of inputs between plots and non-leguminous crop was used as a reference crop in the case of estimation of Biological Nitrogen Fixation.

Soil PH was determined by using Temp pH meter. Barkley and Black method was used to determine the organic carbon. Kjeldahl distillation method was used to determine total nitrogen. Bray 1 extraction method was used to determine Phosphorus. Exchangeable cations were determined using ammonium acetate at pH of 7.0. All data were subjected to Analysis of Variance (ANOVA) and means were separated using GENSTAT statistical package 12th edition. Least significant difference(Lsd) at 5% probability level was used to compare the treatment means. Chinese variety of groundnut was used and planted at a spacing of 60cm between rows and 20cm between plants for spreading type or 50cm row and 15cm plant to plant for erect types. None of the mineral fertilizers applied significantly ($P<0.05$) increased in shoot biomass. The use of PK increased the biomass yield at 50% flowering by 62% over the control. The sole application of P yielded the highest agronomic efficiency. The use of PKMgS had the highest grain yield of 800 kg/ha which was however not a significant ($P<0.05$) increase over control in all the study sites. All the mineral fertilizer application options were not cost effective.

Biography

Jefferson is currently a Masters student in Biodiversity and Ecosystem Management in University of Camerino, Italy. He took his undergraduate degree at Kwame Nkrumah University of Science and Technology in Ghana. He once worked with Ministry of Food and Agriculture, Tema Metropolitan in Ghana as an Agricultural extension agent where informations were well disintegrated to farmers from the local government.

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