

Orange Fleshed Sweet Potato Response to Filter Cake and Macadamia Husk Compost in Two Agro-Ecologies of Kwazulu-Natal, South Africa

Authors : Kayode Fatokun, Nozipho N. Motsa

Abstract : Field experiments were carried out during the summer/autumn (first trial) and winter/spring (second trial) seasons of 2019 and 2021 in Dlangubo, Ngwelezane, and Mtubatuba areas of KwaZulu-Natal Province of South Africa to study the drought amelioration effects and impact of 2 locally available organic wastes [filter cake (FC) and macadamia husk compost (MHC)] on the productivity, and physiological responses of 4 orange-fleshed sweet potato cultivars (Buregard cv., Impilo, W-119 and 199062.1). The effects of FC and MHC were compared with that of inorganic fertilizer (IF) [2:3:2 (30)], FC+IF, MHC+IF, and control. The soil amendments were applied in the first trials only. Climatic data such as humidity, temperature, and rainfall were taken via remote sensing. The results of the first trial indicated that filter cake and IF significantly performed better than MHC. While the strength of filter cake may be attributable to its rich array of mineral nutrients such as calcium, magnesium, potassium, sodium, zinc, copper, manganese, iron, and phosphorus. The little performance from MHC may be attributable to its water holding capacity. Also, a positive correlation occurred between the yield of the test OFSP cultivars and climatic factors such as rainfall, NDVI, and NDWI values. Whereas the inorganic fertilizer did not have any significant effect on the growth and productivity of any of the tested sweet potato cultivars in the second trial; FC, and MHC largely maintained their significant performances. In conclusion, the use of FC is highly recommended in the production of the test orange-fleshed sweet potato cultivars. Also, the study indicated that both FC and MHC may not only supply the needed plant nutrients but has the capacity to reduce the impact of drought on the growth of the test cultivars. These findings are of great value to farmers, especially the resource-poor ones.

Keywords : amendments, drought, filter cake, macadamia husk compost, sweet potato

Conference Title : ICSEA 2022 : International Conference on Sustainable Environment and Agriculture

Conference Location : New York, United States

Conference Dates : October 06-07, 2022