ASSESSING THE EFFICACY OF COMMERCIAL PHOSPHORUS PRODUCTS FOR IMPROVING MAIZE PRODUCTION IN TWO REGIONS IN KENYA

Mungai, N.W. [*] ***and Korir, H.***
Department of Crops, Horticulture and Soils, Egerton University
[*]***Corresponding Author:***
nmungai@egerton.ac.ke

ABSTRACT

Registration requirement for biological and foliar agrochemicals require stringent processes to assess the efficacy of such products. However, once these products are in the market, regulatory mechanisms are usually inadequate to ensure that such products provide the stated benefits to the end users. The objective of this study was to evaluate the agronimic and economic benefit of three commercial products on maize (*Zea mays* L.) growth and yields in two agroecological zones in Kenya. Treatments consisted of three products; Symbion-P, Symbion-Vam or Digrow either as sole application or in combination with two inorganic P sources; triple super phosphate (TSP) and rock phosphate (RP) each at different rates at two sites (Egerton and Chuka) over two cropping seasons. Treatments were arranged in a randomised complete block design. The effect of the products on growth and yield of maize varied across seasons. For instance, in one season, Symbion-P with RP recorded significantly higher biomass (5.08 t ha^{-1}) than with Symbion-Vam (3.93 t ha^{-1}) and Digrow (3.71 t ha^{-1}) at 10 weeks after planting (WAP). Overall, sole application of Symbion-P resulted in higher grain yield than Symbion-Vam. In the combination of RP and TSP at HR/HR, use of Digrow led to significantly higher grain yield (5.48 t ha^{-1}) than Symbion-P (4.37 t ha^{-1}) and Symbion-Vam (4.04 t ha^{-1}). The benefit cost ratio was generally higher in treatments that received a combination of Symbion-P or Vam with TSP and RP. Soil amendments have great potential for improving maize yields along with adjusted phosphorus fertilisation and can, therefore be promoted to farmers as part of integrated soil fertility management to sustain maize crop production.

Key words: *Phosphate-solubilizing microbes, Di-grow, Maize, Phosphorous, Rock phosphate*