

## **Enhancing nutrients use efficiency and grain yield of *Zea mays* L. cultivated on a tropical acid soil using paddy husk compost and clinoptilolite zeolite**

### **ABSTRACT**

With the ever increasing food demand coupled with environmental pollution due to unbalanced use of chemical fertilizers, there is a need to mitigate nutrients use efficiency to improve crop productivity. A field study was carried out from April 2014 to August 2014 on Nyalau Series (Typic Tualenkuts) to determine the effects of chemical fertilizers, compost, and clinoptilolite zeolite on: (i) selected soil chemical availability, nutrients uptake and use efficiency and (ii) grain yield of *Zea mays* L. The field study was conducted for 72 days for two consecutive planting cycles of *Zea mays* L. The use of chemical fertilizers, compost, and clinoptilolite zeolite improved nutrients use efficiency and grain yield of *Zea mays* L. because of nutrients released from compost and retention of exchangeable cations on the exchange sites of clinoptilolite zeolite. The use of chemical fertilizers, compost, and clinoptilolite zeolite does not only improved timely uptake of nitrogen, phosphorus, potassium, calcium, magnesium, and sodium in the aboveground biomass of *Zea mays* L. but also affects the higher grain yield of *Zea mays* L. compared with chemical fertilizers only. Application of chemical fertilizers, compost, and clinoptilolite zeolite can improve nutrients availability, uptake and use efficiency, so was grain yield of *Zea mays* L.

**Keyword:** Compost; Nutrient use efficiency; Zeolite; Maize yield