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Integrated Use of Organic and Inorganic Fertilisers for Maize Production

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Abstract

Integrated nutrient management (INM) is an approach that seeks to increase crop production and safeguard the environment for future generation. However, the current agricultural practices under Ethiopian condition are exploitive type that enhances nutrient mining and an inadequate supply of nutrients is also a key impediment for sustainable crop production. Thus, the objective of the study was to use INM technique to increase maize production in sustainable manner. The study was conducted for three consecutive years (2001 to 2003) on acidic Alfisols of Bako Agricultural Research Center. The treatments of the experiment was control (zero), *Mucuna pruriens* as improved fallow (IF), IF + 55/10 kg N/P ha^{-1}, IF + 37/7 kg N/P ha^{-1}, IF + 4 tons (t) farmyard manure (FYM) ha^{-1}, IF + 2.7 t FYM ha^{-1}, and the recommended rate of NP fertilisers (110/20 kg N/P ha^{-1}). The results showed significant differences among the treatments on maize grain yield in all cropping seasons except for the 2002 due to soil moisture deficit at grain filling stage. The integrated use of IF along with FYM also improved important soil chemical properties, and the uptake of N, P, and K. Moreover, the sole use of IF increased maize grain yield by 75, 56 and 244 % in 2001, 2002 and in 2003 cropping seasons, respectively, over the control treatment. Therefore, the use of IF along with FYM or low rate of NP fertilisers could improve maize production, and productivity in Western Ethiopia. However, further research is required to use *Mucuna* spp to use as feed and/or food to increase its adoption since it recently introduced to the country.

Keywords: Farmyard manure, improved fallow, *Mucuna*, NP fertilisers, Western Ethiopian

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