Geophysical Research Abstracts
Vol. 14, EGU2012-379-1, 2012
EGU General Assembly 2012

Optimizing Nitrogen Fertilization of Maize (Zea mays L.) by Biochar Application on Degraded Land of East Java, Indonesia

T Islami and W Utomo
University of Brawijaya, Soil Science, Malang, Indonesia (hadi_utomo@hotmail.com, +62341565522)

ABSTRACT
Field experiments were carried out to explore the possibility of increasing the efficiency of nitrogen fertilization with biochar application. The experiment was done for three three consecutive maize cropping on degraded land of Wringinrejo, Blitar, East Java, Indonesia. The first experiment with the aim of evaluating the effect of biochar application on maize yield and nitrogen efficiency was carried out from September 2009 to May 2010; with the treatments of (1) Control (No fertilizer), (2) NPK, (3) NPK + Farmyard Manure (FYM), (4) FYM biochar. The second experiment with the aim of optimizing nitrogen fertilization on biochar treated soil was done in November 2010 to March 2011; the treatment consist of five N levels, i.e: (1) No N, (2) 22,5 kg N/ha N, (3) 45 kg N/ha, (4) 90 kg N/ha, and (5) 180 kg N/ha, and 2 soil condition (1) previously biochar treated soil, and (2) untreated soil. The result showed that application of fertilizer (NPK) and organic amendment increase the maize yield. Until the second maize, the yield of FYM and FYM biochar maize did not significantly different with that of fertilizer maize only. There was an increase in soil fertility status (especially CEC, C, N and K) of the soil treated with FYM and FYM biochar. The second experiment result showed that biochar application increased N fertilization efficiency. This was indicated that to obtain the same yield, the N fertilizer rate on biochar treated soil was lower compare to that of untreated soil. With application of 45 kg N/ha the maize yield on FYM biochar treated soil was 4.6 ton/ha. For untreated soil,on the other hand, in order to obtain the same yield, required about 90 kg N/ha.

Key words: Farm Yard Manure, nitrogen efficiency, organic amendment, maize yield.