Effect of Chicken Compost Application on N Mineralization and Productivity Potential in Alternative Soils

Y. H. Tsai

Abstract

Field experiment was carried out with applying chicken compost of 0, 5, 10, 15, t/ha and chemical N fertilizer of 0, 75, 150, 225 kg/ha in alternative paddy soil located at Pingtung area. Sweet corn yield on fall season showed significantly different among compost treatments and N fertilizer treatments. There are no interaction effects for both type of fertilizers in first year, but significantly effects in second year, it means that N fertilizer should reduce when high rate of compost was used. From soil analysis of inorganic N, residue effect of compost was obvious after 2 years of application. Yield increase 24–29% for $N_{150}M_{10}$ treatment which own the best yield, comparing with N_0M_0 treatment. The efficiency of absorbed–N producing yield (NE) is the highest for N_0M_0 treatment. The NE value decreased in increasing N application. Average organic matter content of alternative soil reduced from 372% to 3.29% in first year, and to 3.19% in second year, which induce low N mineralization (N_0) and high NE. It will keep balance for soil organic matter content and N_0, and reach the maximum yield when 8 t/ha of compost was applied each year. From the viewpoint of economic N application, however, only less than 5 t/ha of compost was fairly needed.

key words : Alternative soil, Sweet corn, Chicken compost, N mineralization, N efficiency, Soil O.M.