

Influence of Composted Organic Waste and Urea Fertilization on Rice Yield, N-Use Efficiency and Soil Chemical Characteristics

^{1,2}J. Ofori and D. K. Anning

¹*Soil and Irrigation Research Centre, University of Ghana*

²*School of Graduate Studies, University of Ghana*

Corresponding author's email: *oforijos@yahoo.com*

Abstract

Nutrient mining in rice-rice cropping system due to inadequate amount of chemical fertilizer applied is one of the reasons for low rice yield in Ghana. To address this challenge, a field trial was initiated to determine the best nutrient management option to improve yield of rice and soil fertility. The field experiment was conducted at the University of Ghana's Soil and Irrigation Research Centre - Kpong during 2014 and 2015 cropping seasons to evaluate the influence of composted organic waste and urea fertilization on rice yield, Nitrogen-use efficiency and soil chemical characteristics. The study was laid out in a randomized complete block design (RCBD) with three replications and six treatments as follows; N1: Control (no nitrogen application), N2: 100% N from compost, N3: 50% N from compost + 50% N from urea, N4: 70% N from compost + 30% N from urea, N5: 30% N from compost + 70% N from urea, N6: 100% N from urea. N fertilization through compost or urea increased grain yield, yield components, N uptake, N use efficiency and also improved the chemical properties of the soil than the control. Although grain yield under 100% Urea N, and combination of compost N + Urea N at ratio of 50:50 and 30:70 were at par, the soil chemical property significantly improved through integrated compost- urea application. The study indicated that substituting 30 or 50% of the required urea N with the same amount of N through compost improved both soil chemical property and rice yield.