

## Effect of organic amendment derived from co-composting of chicken slurry and rice straw on reducing nitrogen loss from urea

### ABSTRACT

Co-composting of chicken slurry and rice straw with clinoptilolite zeolite and urea as additives was conducted to determine the characteristics of a compost and their effects on controlling ammonium ( $\text{NH}_4^+$ ) and nitrate ( $\text{NO}_3^-$ ) losses from urea. Quality of the compost was assessed based on temperature, moisture content, ash, pH, electrical conductivity, carbon/nitrogen (C/N) ratio,  $\text{NH}_4^+$ ,  $\text{NO}_3^-$ , macronutrients, heavy metals, humic acid, microbial population, germination index, and phytotoxicity test. Moisture content and C/N ratio of the compost were 43.83% and 15, respectively. Total N, humic acid, ash,  $\text{NH}_4^+$ ,  $\text{NO}_3^-$ , phosphorus (P), calcium (Ca), magnesium (Mg), potassium (K), and sodium (Na) increased after co-composting rice straw and chicken slurry. Copper, iron (Fe), manganese (Mn), zinc (Zn), and microbial biomass of the compost were low. The germination rate of *Zea mays* on distilled water and *Spinacia oleracea* growth on peat-based growing medium (PBG) and compost were not significantly different. Urea amended with compost reduced N loss by retaining  $\text{NH}_4^+$  and  $\text{NO}_3^-$  in the soil.

**Keyword:** Ammonium; Clinoptilolite zeolite; Compost; Leaching loss; Nitrate; Urea