Decomposition of Broiler Litter in Selected Alabama Soils. (S03-kpomblekou144243-Poster)

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Abstract:

Decomposition rates of organic C in soils amended with broiler litter (BL) are required for predicting CO2 contribution of BL to the global CO2 balance. Ten non-calcareous agricultural soils (Appling, Cecil, Cobert, Decatur, Dothan, Harsells, Linker, Maytag, Sucamooche, and Troup soil) collected in Alabama were used. A 20-g sample (OD) of a field-moist soil was mixed with sufficient BL to contain 9 g organic C/kg soil in a 250-mL French square bottle. Duplicate bottles were connected to an incubation apparatus and incubated under aerobic conditions at room temperature for 45 days. The CO2 evolved from each bottle was trapped into a test tube containing standard NaOH solution and determined potentiometrically after precipitation of the carbonate. A non-linear regression approach was used to estimate the readily mineralizable organic C pools (Co) and the first-order rate constant (k). Soil properties significantly affected the CO2 evolved, the Co, and the k values of the BL-treated soils. The Co values varied from 0.972 to 11.5 g C/kg in the soils. The half-lives of the C remaining in soils ranged from 27 to 225 days. The first (k1) and second (k2) decomposition phases significantly correlated with percentage CO2 evolved.

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