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DEGRADATION RATE OF LIMED SEWAGE SLUDGE IN AN AGRICULTURAL SOIL

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Abstract

Little is known about the degradation kinetics of sewage sludge, sanitized with $Ca(OH)_2$, in soil. Thus, this work aimed to monitor the degradation of limed sludge, under field conditions, when applied on soil surface or incorporated into the soil. The limed sludge was applied in dystrophic Inceptisol at a dose of 500 kg ha^{-1} yr^{-1} of total nitrogen. The mineralization process in the soil was monitored for 131 days. Samples of organic material were collected for analysis of total and easily oxidizable organic carbon; total, ammonium, nitric and organic nitrogen; volatile solids; and water contents. The undigested secondary sewage sludge generated in wastewater aerobic treatment mineralizes faster when limed and incorporated, compared to being arranged on soil surface. The estimated annual mineralization fraction of the limed sludge was 100% and greater than 95%, when incorporated or arranged on soil surface, respectively. Such values are higher than those established in the Brazilian environmental legislation for undigested sewage sludge disposal on soil.

Key words: organic matter, organic fertilizer, solid wastes

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