THE EFFECT OF STORAGE TIME ON THE LIFE CYCLE OF SWINE MANURE MANAGEMENT SYSTEMS

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Abstract: Waste management is essential for the maintenance of production systems and has been gaining prominence in recent years, not only considering environmental concerns but also with an economic focus. Therefore, life cycle studies stand out as allied tools to evaluate the environmental viability of activity and were used in the present study to verify the effect of swine manure storage in terms of practical implications for a treatment system. The "short term climate change" impact category of the IMPACT World+ method, was evaluated for three scenarios: baseline (stabilization of the waste in open lagoons – 120 days – and application to the soil); storage time in gutters (5 days) followed by effluent anaerobic digestion (AD), digestate storage (60 days) before apply it to the soil (scenario 2); and storage (3 days), solid-liquid separation (SLS) of the fractions to subsequent AD, digestate storage (60 days) and soil fertilization. The results demonstrate a strong impact caused by different management practices promoted in the system, the associated short term climate change impacts were 1.76 E^{+2}, 8.64 E^{+1}, and 7.71 E^{+1} kg CO_2eq (short), for baseline, scenario 1 and 2 respectively. As the storage time decreased, there was a reduction of up to 50% of the impacts the greatest environmental benefits were due to the nutrient recovery promoted by the soil application. Thus, it is evident the importance of waste management, to promote a neutral carbon chain.

Keywords: Waste management, circular economy, atmospheric emissions, solid-liquid separation.

Video presentation