

PHYSICOCHEMICAL PARAMETERS IN THE ACCELERATED COMPOSTING PROCESS OF POULTRY CARCASSES IN ROTARY DRUM REACTOR

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Abstract: In Brazil, rotary drum reactors (RDR) have been implemented as a composting technology for the destination of dead poultry carcasses. The study aimed to evaluate physicochemical parameters of biomass in the accelerated composting process of dead poultry carcasses using RDR. The research was carried out with four simultaneous repetitions, using RCRs with 3.6 m³ volume, which worked with 24 minutes rotation time and 4 hours rest time between aerations (drum rotations). Initially, 130 kg of poultry carcasses and 300 kg of sawdust were placed. The experiment has been developed for 94 days, from the first materials insertion into the reactors to compost removal. During this period, new poultry carcasses were added, totalizing 560 kg insertion of this material. The evaluated parameters were temperature, Carbon (C) and Total Nitrogen (TN), and C:N ratio. The biomass temperature has been above 50 °C in 30% of the period. There was nearly 5% reduction in the C concentration during the process, reaching 43.58±0.35% of DM at the end of the study. The initial TN was 1.65% of the DM, decreasing to 2.85±0.048% at the end of the experiment. The biomass C:N ratio was 29.26 at the beginning, and changed to 15.26±0.31 at the end of the process. The physicochemical parameters evaluated in the produced substrate comply with current legislation, showing that the use of RDRs is promising for the destination and treatment of dead poultry carcasses.

Keywords: Poultry carcasses, accelerated composting, rotary drum reactors.



Video presentation