

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## COMPOSTING AERATED AND NON-AERATED STATIC WINDROWS WITH HATCHERY AND UNIVERSITY RESTAURANT WASTE

Ranielle Nogueira da Silva VILELA\*<sup>1</sup>, Ana Carolina Amorim ORRICO<sup>1</sup>, Alice Watte SCHWINGEL<sup>1</sup>, Marcio Romero AVILA<sup>1</sup>, Wellington dos SANTOS<sup>1</sup>, Juliana Dias OLIVEIRA<sup>1</sup>, Marco Antonio Previdelli ORRICO JUNIOR<sup>1</sup>, Isabelly Alencar MACENA<sup>1</sup>

\*corresponding author: raniivilela@gmail.com

<sup>1</sup>Federal University of Greater Dourados, Dourados, Mato Grosso do Sul, Brazil

**Abstract:** Different methods of aerating composting windrows are indicated depending on substrate origin and characteristics, taking into account investment and operational costs, which will determine the time for windrow maturation and reduction of solid constituents. This study aimed to assess total (TS) and volatile (VS) solids reductions in static windrows, whether aerated or not, formed by organic residues (leftovers from the university restaurant and egg hatchery) during the winter and summer using a completely randomized 4 x 2 x 2 factorial study design. The windrows comprised alternate layers of organic residues and roughage material at a 3:1 ratio, respectively, and used composting cells with individual capacity of 150 to 200 kg of natural matter. 50 mm diameter PVC pipes perforated lengthwise were placed between the layers to inject air at mean flow of 0.9 L.m<sup>-1</sup> throughout the windrow. TS and VS contents were measured at the beginning and end of the process, which lasted for 75 days, to follow the breakdown of organic residues while windrow temperature was monitored daily. Reductions in TS and VS were influenced only by the waste making up the windrows and were higher (P<0.05) for restaurant residues (70.6 and 75.2%) compared with hatchery residues (53.8 and 63.5%). The initial composition of the organic waste directly impacted VS reductions during composting, which were lower for hatchery waste windrows mainly due to the higher proportion of eggshells in its composition, which reduced the availability of organic material to be degraded. The mean temperatures in the thermophilic range were 52.7 and 53.4 °C whereas the mean temperatures throughout composting of restaurant and hatchery waste were 44.9 and 47.1 °C, respectively. Those high temperatures reflect how easily the organic material is consumed by the microorganisms in the medium and are extremely important to eliminate pathogens and reduce solids, thus improving organic fertilizer quality. The results obtained lead to the recommendation of composting restaurant and hatchery waste in static windrows with no aeration.

**Keywords:** compost, losses, temperature

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