

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## **SOLIDS REDUCTIONS IN COMPOSTING WINDROWS FORMED BY FISH AND SLAUGHTERHOUSE RESIDUES**

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**Abstract:** Organic residues are efficiently used in composting systems to treat and recycle nutrients, however, static windrows may be recommended in face of the biological risk of handling such residues. To some materials, the lack of revolving can impair the process and reduce the breakdown of solid constituents, thus forced aeration is recommended. 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 fish filleting and cattle and sheep slaughterhouses) during the winter and summer using a completely randomized 4 x 2 x 2 factorial 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. TS reductions were influenced by the interaction between residue and aeration, with the highest values (66.65%) (P<0.05) found in the non-aerated windrows with slaughterhouse residue. VS reductions were not influenced by season or aeration (P>0.05), yielding mean values of 65.9 and 68.7% for slaughterhouse and fish residues, respectively. The mean temperatures of slaughterhouse and fish residues were within the thermophilic range (49.9 and 48.1°C) over the composting period while the mean temperatures in the thermophilic phase were 55.8 and 54.6 °C for these residues. Maintaining the temperatures in the thermophilic range depends on medium aeration conditions and on the ease of residue breakdown and likely contributed to the high solids reductions observed. Based on these results and aiming at reducing costs with residue management, composting slaughterhouse and fish residues is recommended in static windrows without aeration.

**Keywords:** compost, efficiency, losses

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