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UREA-ASSISTED COMPOSTING OF SHEEP MANURE: THE IMPACT OF C/N RATIO ON PHYSICOCHEMICAL PROPERTIES

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Abstract

This work aimed to quantify the effect of the initial level of the C/N ratio, adjusted using urea, on different mixtures during 7 months of heap composting. In light of the current study results, the use of urea to adjust the carbon-to-nitrogen ratio at 3 different levels: 20, 25, and 30 showed significant differences between treatments and higher compost quality for C/N ratios 25 and 30 compared to C/N ratio 20. This difference was highlighted in terms of the self-heating of the mass of the mixture and almost neutral pH for all the heaps at the end of the experiment. The monitoring of different parameters had shown a significant decrease in electrical conductivity and nitrate (NO₃) content, while calcium content and cation exchange capacity had increased considerably during the process. Other parameters had shown no significant effect, namely phosphorus, potassium, sodium, total nitrogen, and organic matter contents, indicating the effectiveness of the process for the whole treatment regardless of the initial C/N ratio. Biowaste production considered as a real environmental concern today could be mitigated through heap composting of raw sheep manure transforming it into a valuable resource that could be used as organic amendments.

Key words: biowaste, chemistry, compost, environment, sheep manure

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