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Review

Role of biochar as an additive in organic waste composting

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1 **Role of biochar as an additive in organic waste composting**

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11

12 **Abstract**

13 The use of biochar in organic waste composting has attracted interest in the last decade due to
14 the environmental and agronomical benefits obtained during the process. Biochar presents
15 favourable physicochemical properties, such as large porosity, surface area and high cation
16 exchange capacity, enabling interaction with major nutrient cycles and favouring microbial
17 growth in the composting pile. The enhanced environmental conditions can promote a change
18 in the microbial communities that can affect important microbially mediated biogeochemical
19 cycles: organic matter degradation and humification, nitrification, denitrification and
20 methanogenesis. The main benefits of the use of biochar in composting are reviewed in this
21 article, with special attention to those related to the process performance, compost
22 microbiology, organic matter degradation and humification, reduction of N losses and
23 greenhouse gas emissions and fate of heavy metals.

24

25 *Keywords:* N losses; humification; methane; nitrous oxide; aeration

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